

**REMOVAL PROGRAM
PRELIMINARY ASSESSMENT/
SITE INVESTIGATION REPORT
FOR THE
BUILDING 108, CHARLESTOWN NAVY YARD
CHARLESTOWN, MASSACHUSETTS**

March 19, 2009

Prepared For:

U.S. Environmental Protection Agency
Region I
Emergency Planning and Response Branch
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Boston, MA 02114-2023

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March 19, 2009

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I. Preliminary Assessment Form



**EPA REGION I
REMOVAL PRELIMINARY ASSESSMENT**

**Building 108, Charlestown Navy Yard
Charlestown, Massachusetts**

Name: Building 108 **Location:** Charlestown Navy Yard
Town: Charlestown **County:** Suffolk **State:** Massachusetts

Site Status: ☐NPL ☒NON-NPL ☐RCRA ☐TSCA
 ☐ACTIVE ☒ABANDONED ☐OTHER

☒Attached USGS Map of Location ☐Site I.D. No.:

Latitude: 42°22'38" North **Longitude:** 71°03'13" West

Referral

☐Citizen ☐City/Town ☒State ☐Preremedial
☐RCRA ☐Other:

Name of referring party: Massachusetts Department of Environmental Protection
Telephone:() **Address:** One Winter Street, Boston, Massachusetts 02108

Contacts Identified

1) Ann Malewicz **Telephone:**(617) 292-5659
2) **Telephone:**()

Source of Information

☒ **Verbal:** Communications with the Massachusetts Department of Environmental Protection (MassDEP)

☒ **Report:** October 2002 Status Report Memo by Mr. Stephen J. Umbrell, Project Engineer of the US Army Corps of Engineers, the December 2005 MassDEP Asbestos, Demolition, Renovation Inspection Checklist, and the April 17, 2008 Structural Building Inspection and Assessment Report by CDW Consultants, Inc.

☐ **Other:**

Potential Responsible Parties	
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Site Access

Physical Site Characterization

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Physical Site Characterization (Concluded)

A site reconnaissance was conducted on November 9, 2007, with the building interior and exterior reviewed. A sampling and analysis plan for the Site Inspection was developed based on observations during the site reconnaissance.

Building Inspection and Structural Assessment: On November 9, 2007, an internal visual assessment of asbestos containing materials (ACMs) was conducted by Allen Grinnell of ALG Environmental Consulting, L.L.C. (ALG) of Derry New Hampshire. Visual observations revealed the presence of numerous suspect ACMs including boiler insulation, pipe insulation, pipe fittings, gasket materials, flooring materials, transite, and miscellaneous debris from previous abatement attempts.

Structural assessment observations were also documented on November 9, 2007 by Marty Sonbolian, P.E. of North American Site Developers, Inc. (NASDI). The structural inspection report concluded that the overall condition of the building presents a danger for any entrants, and many portions of the structure are severely deteriorated resulting in an unstable environment.

The following conclusions were developed based on the results of the above preliminary assessment activities.

- Many interior portions of the building's interior were observed to contain evidence of ACMs or were identified as suspect containing materials
- Exterior observations revealed several suspect ACM including asphalt roofing materials, window glazing, roofing cement, and limited amounts of thermal system insulation (TSI)
- Portions of the structure including the roof/roof components, interior structural and non-structural members, and floors were observed to be in poor condition, thereby creating unsafe conditions immediately near or within the buildings interior.

In addition to the preliminary assessment activities summarized above, a structural Building Inspection/Assessment and associated report was completed by CDW Consultants, Inc. (CDW) during the winter/early spring of 2008. The CDW's April 17, 2008 *Structural Building Inspection and Assessment Report* summarized results of a comprehensive evaluation of the current building condition and its overall structural integrity. This report concluded the following:

- The removal of several main structural columns and their replacement with scaffold frames of inadequate capacity has severely impacted the structural integrity of the building;
- The roof is degraded in localized areas and has collapsed at two separate locations, overall the roof structure may not withstand statutory snow loads;
- The floors are generally damaged throughout the building with varying degrees of severity, not all floor areas were visible due to the presence of debris and rubble throughout the interior of the structure;
- The brick walls were observed to be intact, however, severe cracking and fracturing was

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observed along the external roof corbel, level, and building corners, and lateral stability of the external walls surrounding the former boiler rooms is inadequate;

- The foundation walls of the structure were not visibly inspected, however, their condition was considered to be adequate; and,
- Various safety measures must be implemented to ensure worker safety during hazardous materials abatement activities at the site.

Description of Substances Possibly Present, Known or Alleged: ACMs are known to exist within the building, and soil impacted with metals, volatile organic compounds (VOCs), and semi VOCs, are likely present as a result of former operations at the Site.

Existing Analytical Data

(X) Real-Time Monitoring Data: Monitoring equipment utilized for the duration of the November 9, 2007 site walk-through included the following:

- Mini RAE 2000 photoionization detector (PID) equipped with a 10.6 eV lamp and calibrated to benzene standard set to a response factor of 0.54,
- VRAE 4-way gas meter measuring percent oxygen, lower explosive limit (LEL), carbon monoxide concentrations, and hydrogen sulfide concentration, and
- Ludlum radiation meter measuring radiation in micro Rads per hour (uRad/Hr).

No elevated concentrations of total organic vapors (TOVs), carbon monoxide, or hydrogen sulfide were noted during the reconnaissance. Percent LEL was observed at zero, percent oxygen was observed at 20.9 percent, and the Ludlum radiation meter indicated a maximum value of ≤ 15.0 uRad/Hr, due to the presence of granite (making up the majority of the construction material of the adjacent rope walk structure).

() Sampling Data:

Potential Threat

Description of potential hazards to the environment and/or population: identify any of the criteria for a Removal Action (from NCP) that may be met by the site under 40 CFR 300.415 [b] [2].

- i. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants or contaminants. There is potential that airborne ACM particulates may have an impact on nearby air quality, however, soil impact is not expected to pose a significant threat as the Site is secured with a chain link fence.
- ii. Actual or potential contamination of drinking water supplies or sensitive ecosystems. This is

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unknown, as groundwater has not been evaluated as part of this assessment.

iii. Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release. During a site walk conducted by the On-Scene Coordinator, asbestos containing materials were evident throughout the accessible interior portions of the building, and a single 55-gallon drum containing an unknown material was observed. Note that the 55-gallon drum was in poor condition and a flammable/hazardous waste label was also observed on the drum.

Potential Threat (Concluded)

- i. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants or contaminants. The Site is located in a mixed residential and commercial area. A hotel and businesses are located within close proximity to the Site.
- iii. Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release.
- iv. High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate.
- v. Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released: Heavy snow events may cause structural failure to the already weakened building, which will likely result in a release of ACMs to ambient air.
- vi. Threat of fire or explosion: The building is unoccupied and structurally compromised, which may increase the potential for fire.
- vii. The availability of other appropriate federal or state response mechanisms to respond to the release: The Massachusetts Dept of Protection (MassDEP) has requested EPA assistance due to a lack of state funding to address potential threats to public health from asbestos located in the building.
- viii. Other situations or factors that may pose threats to public health or welfare or the environment: Due to collapsed sections of the roof and the continued structural deterioration of the building, a potential threat of inhalation exposure to asbestos exists to human receptors in close proximity to the Site.

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Prior Response Activities

☐ PRP

☒ STATE

☒ FEDERAL

☐ OTHER

Brief Description: Asbestos abatement activities were conducted by the Army Corps of Engineers during the years of 1993 through 1994 and 1999 through 2000, and the MassDEP conducted a recent asbestos inspection on December 7, 2005.

Priority for Site Investigation

☐ High

☒ Medium

☐ Low

☐ None

Comments:

Report Generation

Originator: Jack Jemsek

Affiliation: Sovereign Consulting Inc.

Date: March 19, 2009

Telephone: 413-540-0650

II. Site Investigation Form



**EPA REGION I
REMOVAL SITE INVESTIGATION**

Inspection Information

Site Name: Building 108 **Address:** Charlestown Navy Yard
Town: Charlestown **County:** Suffolk **State:** Massachusetts
Date of Inspection: December 12, 2007 **Time of Inspection:** 8:00 AM to 2:00 PM
Weather Conditions: light rain, approx 45°F
Site Status at Time of Inspection: ☐ **ACTIVE** ☒ **INACTIVE**
Comments:

Agencies/Personnel Performing Inspection

(X) EPA: Ms. Catherine Young, On-Scene Coordinator

(X) EPA Contractor: Mr. Shawn Rising, START3 8(a) Sovereign Consulting Inc. and START3 8(a), Techlaw, Inc. Ms. Melane Littman

(X) State: Mr. John Macauley, Massachusetts Department of Environmental Protection

(X) Other: Stephen Powell, ALG Environmental Consulting, LLC

Current Owner Based on Field Interview: Boston Redevelopment Authority

Physical Site Characteristics

The Charlestown Navy Yard consists of 129.5 acres of industrial buildings, cranes, dry docks, shipways, piers, residential structures, and military buildings spread along the southeastern Charlestown waterfront in Boston's inner harbor. It is largely built upon fill dredged from the harbor since the early 19th century. The overall aspect is that of a modern marine industrial site with structures that are historically and architecturally significant. These include military structures, such as quarters and armories, general industrial structures such as warehouses and power plants, industrial sites such as a rope-making complex and foundries, and marine structures such as dry docks, piers, and shipways.

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Physical Site Characteristics (Continued)

Building 108 was an electric power plant that was constructed in 1903-04. This brick and concrete structure was subject to continual technical modification and enlargement and now totals 46,667 square feet. Building 108 is significant as it served as the centralized steam, electricity, and compressed air plant for the shipyard. To accommodate technological innovations, additions were made to the north side of Building 108 during World War I. In the 1930's, a chimney, water tank, and ash silo were added. The last addition to Building 108 was a cooling tower built in the 1950's. From 1974 to 1990 some structural steel was removed from the building to accommodate the removal of five boilers, ancillary equipment, and salvageable metal. Asbestos, brick, bird guano, and debris were scattered throughout the building as a result of the decommissioning activities. From 1990 to 2002, the Army Corps of Engineers conducted some preliminary asbestos removal, however, work discontinued due to lack of funds. The building remains in poor structural condition with the roof collapsed in places.

Parameter	Quantities/Extent
() Cylinders:	
(X) Drums: A single 55-gallon drum containing an unknown material was observed within the building's interior during the November 9, 2007 Preliminary Assessment (PA) site reconnaissance. Note that the 55-gallon drum was in poor condition and a flammable/hazardous waste label was also observed on the drum.	
() Lagoons:	
() Tanks: () Above:	
() Below:	
(X) Asbestos: Allen Grinnell of ALG Environmental Consulting, LLC (ALG), a certified asbestos inspection contractor, conducted a visual assessment for the presence of asbestos containing materials (ACMs) of both interior and exterior portions of the on Site structure during the November 9, 2007 site reconnaissance..	
(X) Piles: Soil	
() Stained Soil:	
() Sheens:	
() Stressed Vegetation:	
() Landfill:	
() Population in Vicinity:	
() Wells: () Drinking:	
() Monitoring:	
(X) Other: Marty Sonbolian, P.E. in cooperation with Bryson Stockdale, both of North American Site Developers, Inc. (NASDI) conducted a visual inspection with respect to the on-Site building's structural integrity during the November 9, 2007 site reconnaissance.	

REMOVAL SITE INVESTIGATION

Physical Site Observations

The Site is currently vacant and is surrounded by a chain link fence. The existing structure occupies a majority of the Site with limited open areas surrounding it. The on-site building was observed to be in poor condition and remnant containment materials (likely utilized during previous asbestos abatement attempts) were observed along the roof and the eastern and northern facing walls. Several of the window containment apparatus were also observed to be in poor condition or were missing completely. Open areas surrounding the building consisted of mainly grass overgrowth and an access driveway located along the northern section of the Site. Building debris including bricks, concrete, and wooden planks were observed in areas located immediately adjacent to the structure. An elevated area located immediately to the southeast corner of the building was observed to be surrounded by a concrete structure containing several concrete footings which may have supported the presence of several large transformers.

The interior visual assessment of ACMs conducted by ALG on November 9, 2007 revealed the presence of numerous suspect ACMs. These ACMs included boiler insulation, pipe insulation, pipe fittings, gasket materials, flooring materials, transite, and miscellaneous debris from previous abatement attempts. Exterior observations also identified potential ACMs including asphalt roofing materials, window glazing, roofing cement, and limited amounts of thermal insulation.

Structural assessment observations were also conducted by NASDI concurrent with asbestos assessment activities. The structural inspection documented that the overall condition of the building presents a danger for entrants, and many portions of the structure are severely deteriorated contributing to an unstable condition creating an environment unsafe for workers within the building.

Field Sampling and Analysis

Matrix/Analytical Parameter	Field Instrumentation				
	CGI/O ₂	RAD	PID	FID	Other
Background Readings:	21% O ₂	24 u/Rad	<1.0 ppmv	NA	0% LEL <1.0 ppmv H ₂ S <1.0 ppmv CO

Air:

Soil: <1.0 to 3.9 ppmv

Surface:

Water:

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Tanks:
Drums:
Vats:
Lagoons:
Spillage:
Run Off:
Piles:
Sediments:
Groundwater:
Other:

Field Quality Control Procedures

(X) SOP Followed	() Deviation From SOP
Comments:	

Description of Sampling Conducted

A total of nine surficial soil samples (S-1 through S-6 and AS-1 through AS-3) were collected for analysis of one or more the following constituents of concern (COCs):

1. Asbestos-Containing Materials (ACMs)
2. Volatile Organic Compounds (VOCs)
3. Semi Volatile Organic Compounds (SVOCs) with Tentatively Identified Compounds (TICs), and including polychlorinated byphenols (PCBs)
4. Select Total Metals

Additionally, all soil samples were field screened using a photoionization detector (PID) calibrated with isobutylene to a benzene response factor of 0.54. PID readings for all samples ranged from <1.0 ppmv to 3.9 ppmv. Bulk building materials samples were also collected for asbestos analysis, and outdoor air monitoring for asbestos was conducted along the site perimeter.

NASDI's Structural Engineer's determined that due to the integrity of the building, samples could not safely be collected from within the building. Therefore, results of the preliminary asbestos visual assessment were utilized to confirm the presence of ACMs within the building. ACMs were identified in several interior building components including boiler insulation, pipe insulation, pipe fittings, gasket materials, flooring, transite, and miscellaneous debris. Furthermore, large quantities of debris and thermal system insulation were observed scattered throughout the building's interior.

REMOVAL SITE INVESTIGATION

Analyses

Analytical Parameter	Media	Laboratory
<input checked="" type="checkbox"/> VOC	<input checked="" type="checkbox"/> AIR	<input checked="" type="checkbox"/> NERL
<input checked="" type="checkbox"/> PCB	<input type="checkbox"/> WATER	<input type="checkbox"/> CLP
<input type="checkbox"/> PESTICIDE	<input checked="" type="checkbox"/> SOIL	<input checked="" type="checkbox"/> PRIVATE
<input checked="" type="checkbox"/> METALS	<input type="checkbox"/> SOURCE	<input type="checkbox"/> SAS
<input type="checkbox"/> CYANIDE	<input type="checkbox"/> SEDIMENT	<input type="checkbox"/> SOW
<input checked="" type="checkbox"/> SVOC	<input checked="" type="checkbox"/> BUILDING MATERIALS	<input type="checkbox"/> Field
<input type="checkbox"/> TOXICITY		
<input type="checkbox"/> DIOXIN		
<input checked="" type="checkbox"/> ASBESTOS		
<input type="checkbox"/> OTHER		

Analytical results: [see attached]

Receptors

<u>Receptor Types</u>	<u>Comments</u>
<input type="checkbox"/> Drinking Water <input type="checkbox"/> Groundwater: <input type="checkbox"/> Unrestricted Access: <input checked="" type="checkbox"/> Population in Proximity: <input type="checkbox"/> Sensitive Ecosystem: <input type="checkbox"/> Other:	<input type="checkbox"/> Private: <input type="checkbox"/> Municipal:

Potential receptors include nearby businesses and residents located in close proximity to Building 108.

Additional Procedures for Site Determination

☐ Biological Evaluation ☐ ATSDR

REMOVAL SITE INVESTIGATION

Site Determination

Depending on further information, criteria that may be met by the Site include 40 CFR 300.415 [b] [2], parts:

- i. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants or contaminants.
- iii. Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release.
- iv. High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, which may migrate.
- v. Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.
- vi. Threat of fire or explosion.
- vii. The availability of other appropriate federal or state response mechanisms to respond to the release: The Massachusetts Dept of Protection (MassDEP) has requested EPA assistance due to a lack of state funding to address potential threats to public health from asbestos located in the building.
- viii. Other situations or factors that may pose threats to public health or welfare or the environment: Due to collapsed sections of the roof and the continued structural deterioration of the building, a potential threat of inhalation exposure to asbestos exists to human receptors in close proximity to the Site.

Report Generation

Originator: Jack Jemsek
Affiliation: Sovereign Consulting Inc.

Date: March 19, 2009
Telephone: 413-540-0650

III. Narrative Chronology

1.0 INTRODUCTION

The site is located in the Charlestown Navy Yard at the intersection of 3rd Avenue and 9th Street in Charlestown, MA (see Figure 1 in **Appendix A**). A Preliminary Assessment was conducted on November 9, 2007, and a Site Inspection was conducted on December 12, 2007.

1.1 November 9, 2007 Preliminary Assessment

Personnel present during the Preliminary Assessment include the following:

- US EPA On-Scene Coordinator – Ms. Catherine Young
- Sovereign Consulting Inc. START3 8(a) – Mr. John Jemsek (Project Manager) and Mr. Shawn Rising (Site Leader)
- TechLaw, Inc. START3 8(a) – Ms. Jennifer Anziano
- ALG Environmental Consulting, LLC (ALG) – Mr. Allen Grinnell (asbestos monitoring)
- North American Site Developers, Inc. (NASDI) – Mr. Marty Sonbolian, P.E. and Mr. Bryson Stockdale (preliminary structural assessment)

On November 9, 2007, the above indicated personnel were on-site to complete the following preliminary assessment activities:

- Assess the structural integrity of the building;
- Conduct observations with respect to the presence of oil and/or hazardous materials (OHM) located at the Site. Specifically, asbestos-containing materials (ACM) were evaluated on a visual basis by ALG;
- Conduct an interior assessment with respect to the presence of ACM and OHM;
- Complete ambient air monitoring with hand-held field-screening instrumentation; and,
- Complete observations with respect to the presence of potential nearby receptors.

As part of the above PA site visit by START 3 8(A), NASDI conducted a structural inspection report which has been attached in **Appendix B1**. The NASDI structural engineering assessment report determined that the structural integrity of Building 108 was compromised. Based on NASDI's professional opinion, the building was deemed to be unsafe to work in. This finding subsequently influenced the scope of the sampling activities to be conducted during the site inspection phase of the work (see December 12, 2007 field program below)

A preliminary visual assessment of ACM at the site was also conducted by ALG. The visual assessment evaluated the potential presence of ACMs within the building and site property. ACMs were identified in several interior building components including boiler insulation, pipe insulation, pipe fittings, gasket materials, flooring, transite, and miscellaneous debris. Furthermore, large quantities of debris and thermal system insulation (TSI) were observed scattered throughout the building's interior. A copy of the ALG *Summary of Observations – Visual Assessment for Asbestos Containing Materials* is included within **Appendix B2**.

1.2 December 12, 2007 Site Inspection

Personnel present during the Site Inspection include the following:

- US EPA On-Scene Coordinator – Ms. Catherine Young
- Sovereign Consulting Inc. START3 8(a) – Mr. Shawn Rising (Site Leader)
- TechLaw, Inc. START3 8(a) – Ms. Melane Littman
- ALG Environmental Consulting, LLC – Mr. Stephen Powell
- Massachusetts Department of Environmental Protection – Mr. John Macauley

On December 12, 2007, the above indicated personnel were on-site to complete the following site investigation activities.

- Identify potential areas of concern with respect to the existence of OHM potentially located at the Site;
- Conduct sampling activities of various media including soil, building materials, and air sampling for asbestos; and,
- Set-up stations and conduct ambient air monitoring for asbestos.

Note that site investigation activities were not conducted in the interior portion of Building 108 due to the findings of NASDI's *Structural Inspection Report*, which has been included within **Appendix B1**.

1.3 Site Description

The Site consists of approximately 1.5 acres and is situated immediately west of the 3rd Avenue and 9th Street intersection. A 46,667 square foot facility (Building 108), constructed on Site from 1903 to 1904, historically generated the majority of the shipyard's electrical, steam, and compressed air needs until 1974 when the Navy Yard closed. The foot print of Building 108 encompasses a majority of the Site with limited access areas surrounding the structure. Note that Building 108 shares a common west wall with Building 107. The site is primarily unpaved with limited asphalt pavement to the north of Building 108, along an entrance way heading southwest from 9th Street. There are no known underground storage tanks (USTs) located on the property, however, an underground open pipe was observed adjacent to the northeast corner of the building during the November 9, 2007 Preliminary Site Assessment. No surface water bodies, lagoons, or storm drains are located on the property.

The topography at the Site and nearby properties is relatively flat. The Site is bordered to the north and west by a former rope manufacturer (Rope Walk) and beyond by Interstate 93; to the east by 9th Street, and beyond by a large commercial office building and the Boston Inner Harbor (1,200 feet from the Site); and to the south by 3rd Avenue and beyond by Constitution Inn Hotel. Refer to **Appendix A** for Figure 1 - Site Location Plan and Figure 2 – Site Plan.

1.4 Facility/Property Use

Building 108 served as the boiler plant and compressor/turbine facility that generated electric power, centralized steam, and compressed air for the Charlestown Navy Yard until 1974. To accommodate

technological innovations, additions were made to the north side of Building 108 during World War I. In the 1930's, a chimney, water tank, and ash silo were added. The last addition to Building 108 was a cooling tower built in the 1950's. From 1974 to 1990, some structural steel was removed from the building to accommodate the removal of five boilers, ancillary equipment, and salvageable metal.

2.0 ENVIRONMENTAL SAMPLING ACTIVITIES

2.1 Site Activities

Sovereign Consulting Inc. prepared a site specific Health & Safety Plan (HASP) entitled "*Health and Safety Plan for Site Assessment Operations at Building 108, Charlestown Naval Shipyard, Charlestown, Massachusetts.*" Field monitoring activities were conducted with the following calibrated equipment:

- Mini RAE 2000 photoionization detector (PID) equipped with a 10.6 eV lamp and calibrated to benzene standard set to a response factor of 0.54;
- VRAE 4-way gas meter measuring percent oxygen, lower explosive limit (LEL), carbon monoxide concentrations, and hydrogen sulfide concentration; and
- Ludlum radiation meter measuring radiation in microRads per hour (uRad/Hr).

Elevated concentrations of total organic vapors (TOVs), carbon monoxide, and hydrogen sulfide were not observed during the preliminary assessment and site inspection activities. Percent LEL was observed at zero, percent oxygen was observed at 20.9 percent, and the Ludlum radiation meter indicated a maximum value of ≤ 25.0 uRad/Hr. Note that the elevated radiation readings were a result of the presence of granite block, which is the primary building material of the adjacent Rope Walk structure. Site monitoring did not indicate the presence of a hazardous breathing environment; therefore, Level D personal protection equipment (PPE) was utilized during Site work. No stressed vegetation, waste, drums, or tanks were observed at the Site during the sampling activities. However, various building debris including broken concrete, timbers, and brick were observed along areas adjacent to Building 108, and several soil piles were observed adjacent to the northernmost wall.

The November 9th 2007 site reconnaissance was conducted to survey the building interior and exterior portions of the building. OSHA level C PPE was utilized by personnel who entered the building and a photo log of the site visit was completed. A sketch illustrating the building interior layout is provided in **Appendix A** (see Figure 3 – Building Interior Plan).

Based on NASDI's structural inspection completed during the PA site visit, Building 108 was determined to be structurally compromised and a potential threat to safety of work within the building. In consideration of this assessment, all sampling and monitoring was limited to the exterior portions of the building. Therefore, the OSC provided a revised Scope of Work for sampling and analyses dated November 28th, and START provided a Sampling and Analysis Plan on December 7, 2007.

2.2 Sampling Activities

Sampling activities were performed in accordance with the site sampling and analysis plan quality assurance/quality control (QA/QC) plan entitled “*Sampling and Analysis Plan, Building 108, Charlestown Navy Yard, Charlestown, Massachusetts*”, dated December 7, 2007.

The sampling was conducted on December 12, 2007. As the sampling was conducted outside, OSHA PPE Level D was utilized. Several types of media were collected and sampled at a frequency summarized below:

- Nine surficial soil samples were collected at depths from the ground surface to a maximum of 12 inches below surface grade (bsg) via hand auguring methods;
- Six bulk building material samples were collected at various locations from the Site building (note that six duplicate samples were also collected); and
- Ambient air sampling (for particulates) was conducted at five locations along the Site perimeter fencing via low flow air sampling pumps.

All sample locations were ultimately selected by the US EPA On-Scene Coordinator based on the on-site building location and field observations. Sample locations are provided in **Appendix A** Figure 4 – Soil Sampling Area. Descriptions of all samples collected at the Site are summarized in Table 1 below, and the chain-of-custody records are included as **Appendix C**.

TABLE 1

Sample Descriptions

Station No. and EPA Sample No.	Sample Type and Matrix	Grab or Composite	Sample Depth * (Inches)	Color	Sample Description	TOVs (ppmv)*
S-1	Soil	Grab	0-12	Brown to dark brown	Sand, silt, fill material, and organics	2.1
S-2	Soil	Grab	0-12	Brown to dark brown	Sand, silt, gravel, fill material, and organics	0.2
S-3	Soil	Grab	0-12	Dark brown	Sand, silt, and trace gravel	3.9
S-4	Soil	Grab	0-8	Dark brown to gray	Sand, silt/silty-clay	<1.0
S-5	Soil	Grab	0-12	Dark brown	Sand, silt, and fill material	2.0
S-6	Soil	Grab	0-12	Dark brown	Sand, silt, and gravel	<1.0
AS-1	Soil	Grab	0-3	Brown	Sand and gravel	<1.0

Station No. and EPA Sample No.	Sample Type and Matrix	Grab or Composite	Sample Depth * (Inches)	Color	Sample Description	TOVs (ppmv)*
AS-2	Soil	Grab	0-3	Brown to light gray	Fine sand and silt	<1.0
AS-3	Soil	NA	NA	NA	NA	NA
TR1-01&02	Building Materials	Grab	NA	NA	Transite panel from ground along wall 8	NA
CR1-01&02	Building Materials	Grab	NA	NA	Concrete skim coat on exterior walls 9 and 10	NA
P1-01&02	Building Materials	Grab	NA	NA	Paint on concrete on exterior walls 9 and 10	NA
RF1-01&02	Building Materials	Grab	NA	NA	Built-up Roofing on ground along wall 10	NA
WG1-01&02	Building Materials	Grab	NA	NA	Built-up Roofing an ground along wall 1	NA
RF2-01&02	Building Materials	Grab	NA	NA	Window glazing from metal window frame in wall 10	NA
AMB-1	Particulate in air	Composite	NA	NA	Perimeter fence along 9 th Street	NA
AMB-2	Particulate in air	Composite	NA	NA	Perimeter fence along 9 th Street	NA
AMB-3	Particulate in air	Composite	NA	NA	Perimeter fence along 3 rd Street	NA
AMB-4	Particulate in air	Composite	NA	NA	Perimeter fence along 3 rd Street	NA
AMB-5	Particulate in air	Composite	NA	NA	Perimeter fence at northwest corner	NA

NA – Not Available/Not Applicable

* Field Screening result TOVs in parts per million by volume (ppmv).

Sample AMB-02 void due to pump failure/loss of power.

3.0 ANALYTICAL DATA SUMMARY

On January 29 and February 21, 2008, START received the analytical data results from USEPA Region 1 Laboratory located in North Chelmsford, MA. A summary of analytical data for these analyses are included within a series of tables included in **Appendix D**. Copies of the laboratory analytical reports are included in **Appendix E1**.

3.1 Metals Data

The following compounds were detected above applicable Massachusetts Contingency Plan (MCP) Method 1 S-1 Soil Standards:

Compound	Sample IDs
Cadmium	S-5 (0-12")
Chromium	S-2 (0-12"), S-4 (0-8"), S-5 (0-12")
Lead	S-1 (0-12"), S-2 (0-12"), S-3 (0-12"), S-5 (0-12")
Nickel	S-2 (0-12")
Zinc	S-5 (0-12")

All other metal concentrations were either undetectable (below the laboratory method detection limit (MDL)) or below the applicable MCP Method 1 S-1 Soil Standard. Detectable concentrations of total metals were not observed above Imminent Hazard or Upper Concentration Limit concentrations set forth in the MCP. Refer to **Appendix D** for Table 2 - Surficial Soil Analytical Data Summary – Metals. Copies of the laboratory analytical reports are included in **Appendix E1**.

3.2 Polychlorinated Biphenyls (PCBs) Data

A majority of the PCB analytes were not detected above the MDL with the exception of several low detections of Arochlor-1260 in five of the six surficial soil samples (S-1 0-12", S-2 0-12", S-3 0-12", S-5 0-12", and S-6 0-12"). All detectable PCB concentrations were observed below the applicable Method 1 S-1 Soil Standard. Refer to **Appendix D** for Table 3 -Surficial Soil Analytical Data Summary – Polychlorinated Biphenyls (PCBs). Copies of the laboratory analytical reports are included in **Appendix E1**.

3.3 Base Neutral Acids (BNA) Data

All BNA analytes were either below the MDL or below the applicable MCP Method 1 S-1 Soil Standard, with the exception of one surficial soil sample (S-1 0-12") which contained concentrations of Benzo(a)pyrene above applicable MCP S-1 Soil Standards. The BNAs detected above the MDL but below applicable standards are associated with polynuclear aromatic hydrocarbons (PAHs). BNA compounds that were detected did not exceed Imminent Hazard or Upper Concentration Limits set forth in the MCP. Refer to **Appendix D** for Table 4 -Surficial Soil Analytical Data Summary – Base Neutral Acids (BNAs). Copies of the laboratory analytical reports are included in **Appendix E1**.

3.4 Volatile Organic Compounds (VOC) Data

All VOC analytes were observed below MDLs, and therefore are below the applicable MCP Method 1 S-1 Soil Standards. Refer to **Appendix D** for Table 5 - Surficial Soil Analytical Data Summary – Volatile Organic Compounds (VOCs). Copies of the laboratory analytical reports are included in **Appendix E1**.

3.5 Asbestos Data

Soil samples S-1, S-3, S-4, S-6, AS-1 through AS-3, six building materials samples (including six duplicate samples), and ambient air samples AMB-01 through AMB-05 were collected for asbestos analysis. Note that the surficial soil samples and building materials samples were submitted to the USEPA Region 1 Laboratory as bulk asbestos samples, while the ambient air samples were analyzed by ALG. Asbestos fibers were not detected in any of the bulk soil samples. Asbestos (Chrysotile) was detected in several of the bulk building materials samples collected at the site, including TR1-01, TR1-02, and RF1-02. Additionally, asbestos fibers were identified in each of the ambient air sampling filters with the exception of AMB-02 because of pump failure. Refer to **Appendix D** for Table 6 – Bulk Sample Analytical Data Summary - Asbestos. Copies of the laboratory analytical reports for the bulk samples are provided in **Appendix E2**, and the Ambient Air Testing Report are included in **Appendix E3**.

IV. Appendices

Appendix A

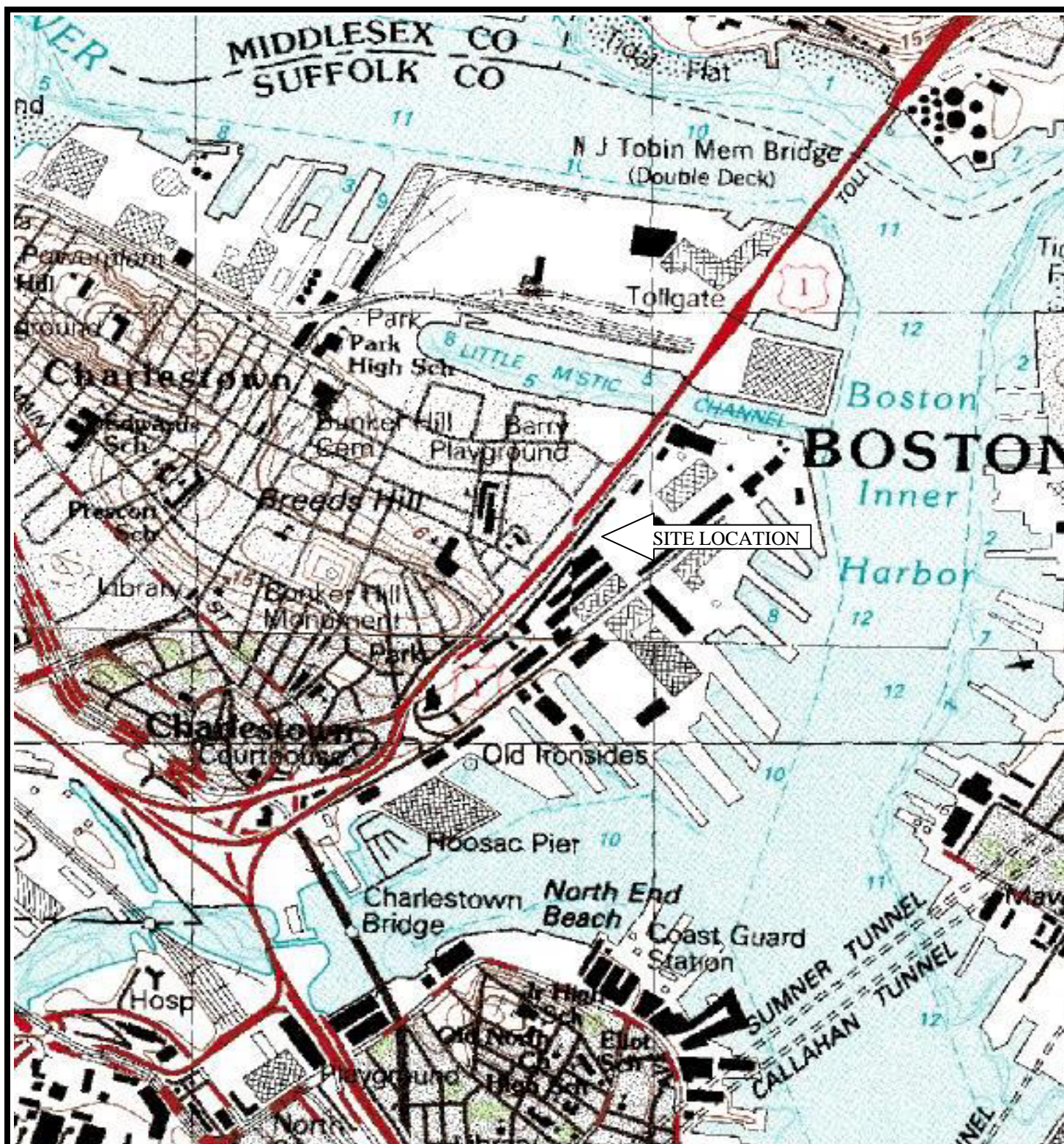
Figures

Figure 1 - Site Location Map

Figure 2 – Site Plan

Figure 3 – Building Interior Plan

Figure 4 – Soil Sampling Area



Reference: Boston North, MA Quadrangle - USGS 1991
Contour Interval = 3 meters

42° 22' 38"N Latitude, 71° 03' 13"W Longitude
UTM: N4693690 E330891 Zone 19 NAD83



SOVEREIGN CONSULTING INC.

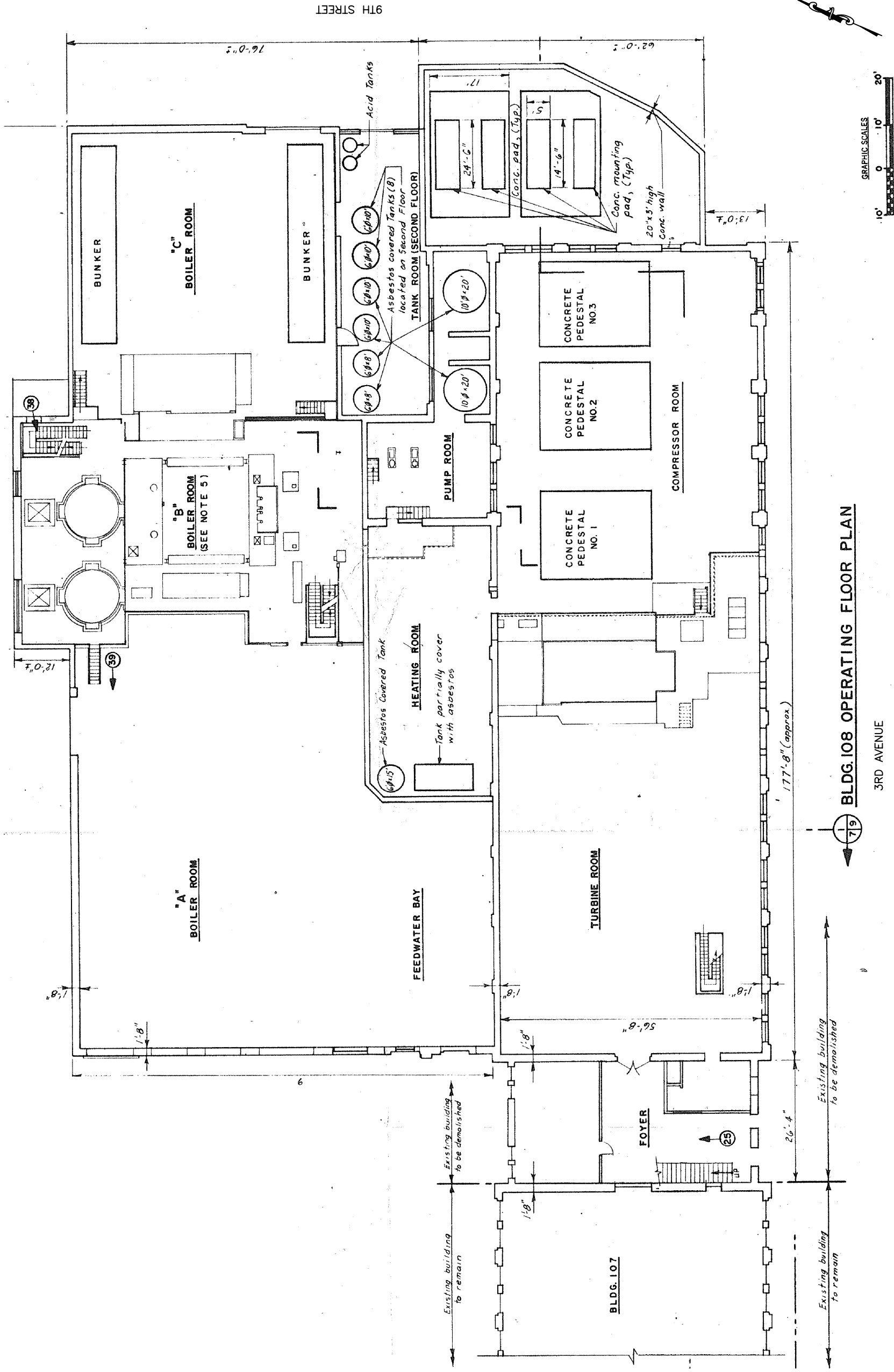
FIGURE 1
SITE LOCATION MAP

Charlestown Navy Yard - Building 108
Charlestown, MA

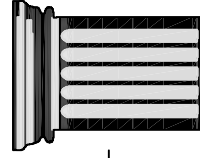
Sovereign
Job No.
EG004-003

Scale (approx.)
1" = 1000'





Note: Adapted from Sheet 7: "Former Charlestown Naval Yard Demolition of Structures and Removal of Debris Building No. 108 Plan", dated Jul. 93 by U.S. Army Corps of Engineers, New England Division.



Sovereign Consulting Inc.

9 Research Drive, Suite 2
Amherst, MA 01002
(413) 253-2100 Fax (413) 253-1604

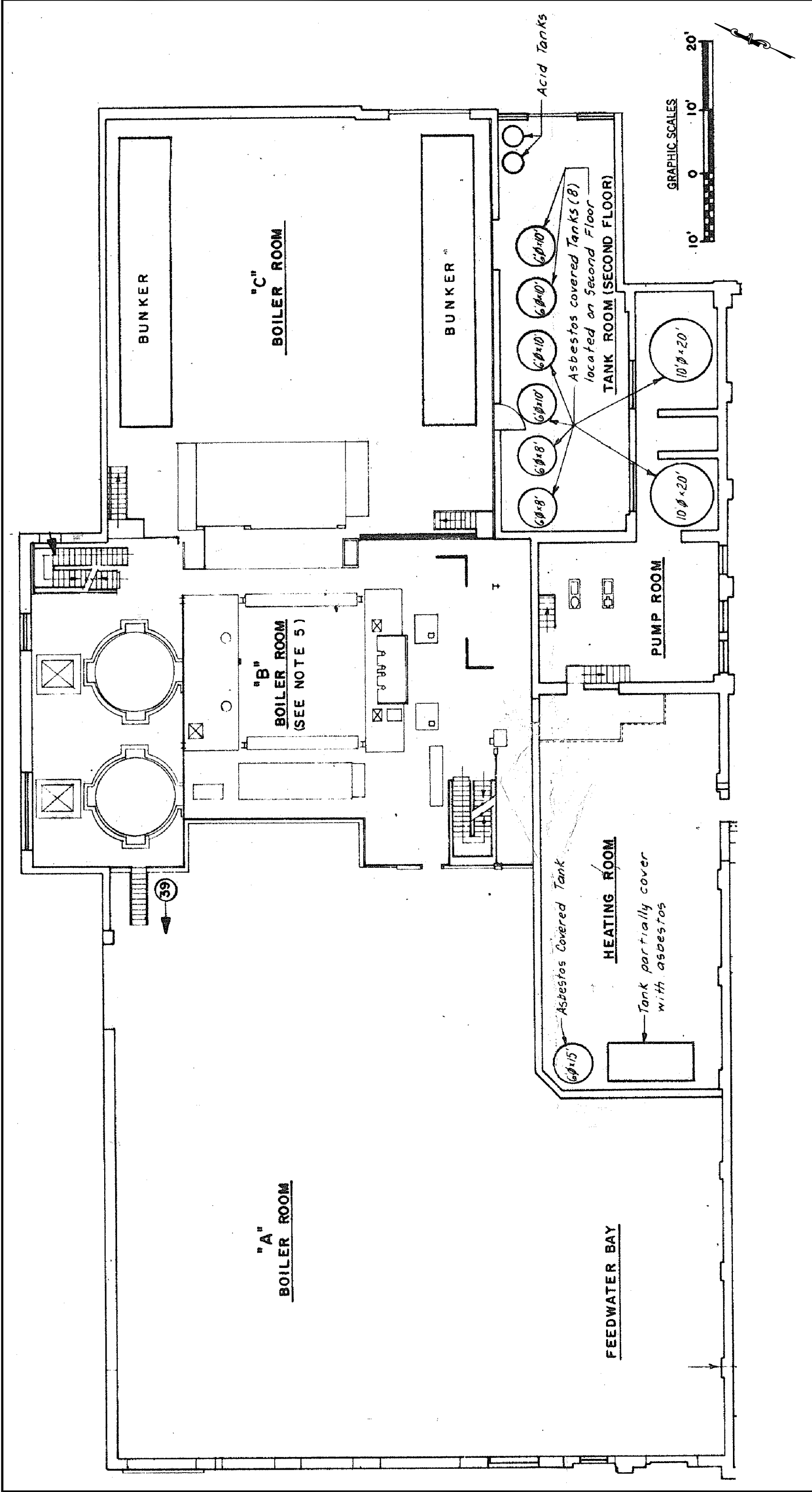
FIGURE 2
SITE PLAN

CHARLESTOWN NAVY YARD
BUILDING 108
CHARELSTOWN, MASSACHUSETTS

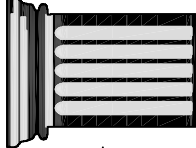
Project No. EG004-003

File: CharlestownSitePlan.dwg

Date: 12/3/07



Note: Adapted from Sheet 7: "Former Charlestown Naval Yard Demolition of Structures and Removal of Debris Building No. 108 Plan", dated Jul. 93 by U.S. Army Corps of Engineers, New England Division.



Sovereign Consulting Inc.
9 Research Drive, Suite 2
Amherst, MA 01002
(413) 253-2100 Fax (413) 253-1604

Project No. EG004-003

Date: 12/3/07

File: CharlestownAccessibleArea.dwg

FIGURE 3
BUILDING INTERIOR PLAN

CHARLESTOWN NAVY YARD
BUILDING 108
CHARELSTOWN, MASSACHUSETTS

Appendix B1

NASDI Structural Inspection Report

November 19, 2007

Structural Inspection Report For

Boiler Room Building No. 108
Former Charlestown Naval Yard, Charlestown, Massachusetts
Reference: Drawings 933-10-03, sheets 7, 8 & 9, dated July 93

I, Marty Sonbolian P.E. inspected the above building on Friday November 9/2007. My professional observations and assessment are as follows:

This is an old building. Its structural elements are steel, brick and concrete. Exterior walls are brick. Roof is steel framed with concrete planks. It has been abandoned for years lacking heat and routine maintenance. The interior has become exposed to the elements due to the gradual deterioration of the roof system.

South Elevation – One pilaster contains a large crack. The corbel on the roof level is deteriorated to the point of losing bricks. Some bricks are in a very unstable condition and could fall any time.

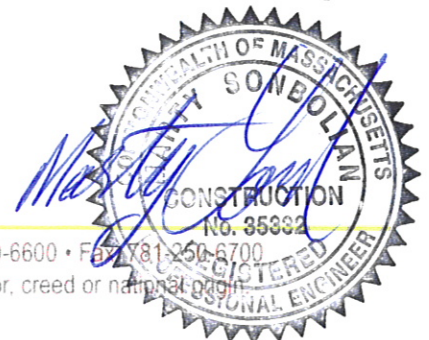
Roof – Roof is Steel framed with concrete plank deck. There are some holes in the roof. Some concrete planks have already deteriorated and fallen. Additional planks could fall anytime. There is some shoring (scaffolding type) on the south side supporting some of the roof structural members. There are also shoring on the north side supporting the steel bunkers. The roof structural members are excessively corroded. Numerous primary and secondary members are partially separated and are hanging. Some of these hanging members could fall at anytime. There are other steel members in hanging position. They are ominous looking and could fall at any time. The legs of the shoring members are also corroded reducing the structural capacity of them.

Interior non-structural members – The condition of some or all of these metal members are same as the structural members. A lot of them are in hanging position. They are excessively corroded.

Floors – There are a lot of debris on the floors. The raised floor in the middle and south-west area is deteriorated to the point of being totally unsafe to walk on. The basement/lower floor contains water which creates extremely dangerous situation.

Conclusion – In light of the above observations concerning unsafe conditions, I must professionally conclude that this building is totally unsafe to work in. Therefore, I recommend that the demolition of it should take place from outside by large hydraulic equipment to avoid any danger to the workers.

File: Charlestownboiler



Appendix B2

ALG Summary Letter for Visual Assessment for Asbestos Containing Materials



Environmental Consulting, L.L.C

20 Island Pond Road Derry, New Hampshire 03038

10/22/2008

Mr. Shawn Rising
Sovereign Consulting
9 Research Dr. Suite 2
Amherst MA. 01002

Subject: Summary of Observations – Visual Assessment for Asbestos Containing Materials

Project: Building 108 – Former Power Plant
Ninth Street
Charlestown, MA

Dear Mr. Rising,

Pursuant to your request, I have summarized my observations regarding the asbestos and suspect asbestos containing materials observed during the site reconnaissance of Building 108 on 9th Street at the Naval Shipyards in Charlestown, MA on November 9th, 2007.

Persons attending the initial site visit included, an EPA representative, Sovereign Consulting representatives, ALG Environmental and a structural engineer from North America Site Developers.

Outside observations revealed a number of suspect containing materials including but not limited to:

- Asphalt roofing materials
- Window Glazing
- Roofing Cement
- Limited Amounts of TSI

Interior observations revealed a substantial number of asbestos containing and suspect containing materials including but not limited to:

- Boiler Insulation
- Pipe Insulation
- Pipe Fittings
- Gasket Materials
- Flooring
- Significant amounts of Debris
- Transite

Please note only limited areas of the facility could be accessed due to the structural instability and disrepair of the building.

The structure was partially abated a number of years ago but was never finished. Large quantities of debris and thermal system insulation were observed throughout. It appears as if the abatement contractor left the jobsite while the work was in progress. This was confirmed by prior documentation provided by Sovereign Consulting.

In my opinion the entire building is contaminated with asbestos and asbestos debris as a result of the degradation of the building over time and the previous abatement activities. Due to the structural instability of the building I do not see any feasible way to safely abate the structure using traditional abatement methods without considerable time and expense to make the building safe which actually may be impossible.



Environmental Consulting, L.L.C

20 Island Pond Road Derry, New Hampshire 03038

I would recommend the building be demolished as Regulated Asbestos Containing Material (RACM). This is something we have done on a number of sites. As an EPA accredited and MA DOS licensed asbestos inspector and project designer, my recommendations are based on 18 years worth of experience on similar types of projects.

I would be more than happy to work with you to develop and abatement / demolition scope of work and project specification. If you need additional information please let me know.

Best regards,

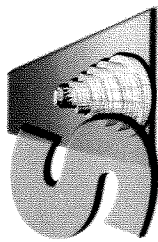
A handwritten signature in blue ink that reads 'Allen Grinnell'. The signature is written in a cursive, flowing style.

Allen Grinnell
General Manager

Cc: File - ALG Project #: 07-319

Appendix C

Chain-of-Custody Records



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:

- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Spectrum Analytical, Inc.
7 Research Drive, Suite 2
Amherst, MA 01002

Invoice To: EMA - Long & E
Catherine Young

Project No.: EG004-603
 Site Name: Abolot Charleston Navy Yard
 Location: Charleston State: MA

Project Mgr.: Shawn Rising

P.O. No.: _____ RQN: _____

Sample(s): S. Rising

1=Na₂S₂O₃ 2=HCl 3=H₂SO₄ 4=HNO₃ 5=NaOH 6=Ascorbic Acid
 7=CH₃OH 8=NaHSO₄ 9=ICE 10=_____

DW=Drinking Water GW=Groundwater WW=Wastewater
 O=Oil SW=Surface Water SO=Soil SL=Sludge A=Air
 X1=_____ X2=_____ X3=_____

Containers:

of VOA Vials
 # of Amber Glass
 # of Clear Glass
 # of Plastic

Analyses:

QA Reporting Notes:
 (check if needed)

- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report
- QA/QC Reporting Level
- ☐ Standard ☐ No QC
- ☐ Other _____

State specific reporting standards:

RCS-2 Soil STDs

* include PCBs w/ SVXs

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix
	S-1 0-12"	10/10/07	5:30am	C	SO
	S-2 0-12"		5:45am	C	SO
	S-3 0-12"		9:00am	C	SO
	S-4 0-8"		9:15am	C	SO
	S-5 0-12"		9:30am	C	SO
	S-6 0-12"		9:45am	C	SO
	AS-1 surface		10:00am	C	SO
	AS-2 surface		10:15am	C	SO
	AS-3 surface			C	SO
	Unlabeled Blank				

☐ Fax results when available to () _____

☒ E-mail to SRISING@SOUCCAN.COM

EDD Format PDF

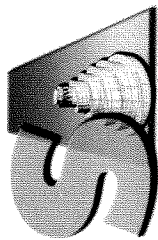
Condition upon receipt: ☒ Filled ☐ Ambient ☐ °C

Relinquished by: Shawn Rising

Received by: Catherine Young

Date: 12/12

Time: _____



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 2 of 2

Special Handling:

- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- ☐ All TATs subject to laboratory approval.
- ☐ Min. 24-hour notification needed for rushes.
- ☐ Samples disposed of after 60 days unless otherwise instructed.

Report To: Spectrum Analytical, Inc.
9 Research Drive, Suite 2
Amburst, MA 01922

Invoice To: EPA Region 2
Catherine Young

Project No.: EC004-003
Site Name: Charlestown Navy Yard
Location: Old 105 Ave State: MA
Sampler(s): S. Spring / S. Powell

Project Mgr.: Shawn Rising

P.O. No.: _____ RQN: _____

1=Na₂S₂O₃ 2=HCl 3=H₂SO₄ 4=HNO₃ 5=NaOH 6=Ascorbic Acid
7=CH₃OH 8=NaHSO₄ 9=_____ 10=_____

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW=Surface Water SO=Soil SL=Sludge A=Air
X1=_____ X2=_____ X3=_____

Containers:

Analyses:

QA Reporting Notes:
(check if needed)

- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

Preservative

Matrix Type

Time:

Date:

Sample Id:

Lab Id:

G=Grab C=Composite

Time:

Date:

Sample Id:

Lab Id:

G=Grab C=Composite

Time:

Date:

Sample Id:

Lab Id:

G=Grab C=Composite

Time:

Date:

Sample Id:

Lab Id:

G=Grab C=Composite

Time:

Date:

Sample Id:

Lab Id:

G=Grab C=Composite

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G=Grab C=Composite

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Lab Id:

G=Grab C=Composite

Time:

Date:

Sample Id:

Lab Id:

G=Grab C=Composite

Time:

Date:

Sample Id:

Lab Id:

G=Grab C=Composite

Relinquished by:

Received by:

Time:

Date:

☐ Fax results when available to ()

☒ E-mail to scoring@screen.com

EDD Format PDF

Condition upon receipt: ☒ Iced ☐ Ambient ☐ °C

Appendix D

Analytical Summary Tables

Table 2 - Surficial Soil Analytical Data Summary – Metals

Table 3 - Surficial Soil Analytical Data Summary – Polychlorinated Biphenyls (PCBs)

Table 4 - Surficial Soil Analytical Data Summary – Base Neutral Acids (BNAs)

Table 5 - Surficial Soil Analytical Data Summary – Volatile Organic Compounds (VOCs)

Table 6 – Bulk Sample Analytical Data Summary – Asbestos

TABLE 2
SURFICIAL SOIL ANALYTICAL DATA SUMMARY - METALS

CHARLESTOWN NAVY YARD
Building 108
Charlestown, Massachusetts

Sample ID	Depth (inches)	Date Sampled	Date Analyzed																			
				Aluminum (mg/kg)	Antimony (mg/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Calcium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Iron (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Magnesium (mg/kg)	Manganese (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Thallium (mg/kg)
S-1	0-12"	12/12/07	1/7/08	7,400	<9.9	<40	120	<0.99	<3.0	4,000	20	7.5	360	0.76	3,000	310	18	<20	<3.0	<40	34	310
S-2	0-12"	12/12/07	1/7/08	8,500	<9.9	<40	100	<0.99	<3.0	6,200	40	8.6	400	0.95	2,800	360	31.0	<20	<3.0	<40	42	280
S-3	0-12"	12/12/07	1/7/08	8,400	<10	<40	82.0	<1.0	<3.0	6,100	28	7.0	350	0.72	2,800	300	18.0	<20	<3.0	<40	41	250
S-4	0-8"	12/12/07	1/7/08	8,700	<10	<40	69	<1.0	<3.0	3,600	41	6.3	120	0.40	2,900	280	19	<20	<3.0	<40	53	180
S-5	0-12"	12/12/07	1/7/08	8,400	20.0	<40	690	<1.0	7.7	6,000	48.0	11.0	2,700	1.8	3,500	340	20	<20	<3.0	<40	44	3,200
S-6	0-12"	12/12/07	1/7/08	6,700	<10	<40	53	<1.0	<3.0	3,700	16	5.8	140	0.28	2,300	260	13	<20	<3.0	<40	25	140

NOTES:

S-1 = Massachusetts Contingency Plan (MCP) Method 1 Soil Standard for category S-1 soil (with GW-1/2/3 Groundwater Standards).

RCS-1 = Reportable Concentration for Category S-1 soils.

~ = No standard established.

¹ = Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil, MassDEP, May 2002

² = In the absence of fill-specific data the "natural" soil value has been adopted (refer to ¹)

(mg/kg) = milligrams per kilogram (parts per million (ppm))

<1.0 = Not detected above laboratory reporting limit (RL). RL is included.

^{j1} = Estimated value due to MS recovery outside acceptance criteria.

^{j3} = Estimated value due to RPD result outside acceptance criteria.

value

Bold font indicates concentration exceeding MCP S-1 Soil Standard or RCS-1 Reportable Concentration in absence of compound-specific S-1 Soil Standard.

value

Dark gray shading indicates concentration exceeding Background Levels¹ for shallow soils

TABLE 3
SURFICIAL SOIL ANALYTICAL DATA SUMMARY - POLYCHLORINATED BIPHENYLS (PCBs)
CHARLESTOWN NAVY YARD
Building 108
Charlestown, Massachusetts

Sample ID	Depth (inches)	Date Sampled	Date Analyzed	Total PCBs (mg/kg)	PCB-1221 (mg/kg)	PCB-1232 (mg/kg)	PCB-1016/1242 (mg/kg)	PCB-1248 (mg/kg)	PCB-1254 (mg/kg)	PCB-1260 (mg/kg)	PCB-1262 (mg/kg)	PCB-1268 (mg/kg)
S-1	0-12"	12/12/07	12/18/07	2.0	~	~	~	~	~	~	~	~
S-2	0-12"	12/12/07	12/18/07	2.0	~	~	~	~	~	~	~	~
S-3	0-12"	12/12/07	12/18/07	~	~	~	~	~	~	~	~	~
S-4	0-8"	12/12/07	12/18/07	100	~	~	~	~	~	~	~	~
S-5	0-12"	12/12/07	12/18/07									
S-6	0-12"	12/12/07	12/17/07									
S-1	0-12"	12/12/07	12/18/07	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	0.11	<0.11	<0.11
S-2	0-12"	12/12/07	12/18/07	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	0.33	<0.12	<0.12
S-3	0-12"	12/12/07	12/18/07	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	0.26	<0.11	<0.11
S-4	0-8"	12/12/07	12/18/07	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12
S-5	0-12"	12/12/07	12/18/07	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	0.12	<0.09	<0.09
S-6	0-12"	12/12/07	12/17/07	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	0.12	<0.09	<0.09

NOTES:

S-1 = Massachusetts Contingency Plan (MCP) Method 1 Soil Standard for category S-1 soil (with GW-1/2/3 Groundwater Standards).

(mg/kg) = milligrams per kilogram (parts per million (ppm))

~ = No standard established.

RCS-1 = Reportable Concentration for Category S-1 soils.

UCL= Upper concentration limit.

TABLE 4
SURFICIAL SOIL ANALYTICAL DATA SUMMARY -BASE NEUTRAL ACIDS (BNAs)

CHARLESTOWN NAVY YARD
Building 108
Charlestown, Massachusetts

Sample ID	Depth (inches)	Date Sampled	Date Analyzed	Anthracene	Acenaphthylene	Acenaphthene	Benzo(a)anthracene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzo(a)pyrene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	2-Methylnaphthalene	Phenanthrene	Pyrene	1-Methylnaphthalene	Bis(2-ethylhexyl)phthalate	Dibenzofuran
				(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
S-1/GW-1	0-12"	12/12/07	12/17/07	1,000	1	4	7	7	1,000	70	2	70	7	1,000	400	7	4	7	10	1,000	~	~	~
S-4/GW-2				1,000	600	1,000	7	7	1,000	70	2	70	7	1,000	2,000	7	40	80	500	1,000	~	~	~
S-4/GW-3				1,000	10	1,000	7	7	1,000	70	2	70	7	1,000	2,000	7	500	300	500	1,000	~	~	~
RCS-1				1,000	1	4	7	7	1,000	70	2	70	7	1,000	400	7	4	7	10	1,000	~	~	~
UCL				10,000	10,000	10,000	3,000	3,000	10,000	10,000	300	400	300	10,000	10,000	3,000	10,000	10,000	10,000	10,000,000	~	~	~
S-1	0-12"	12/12/07	12/17/07	2.60	0.22	1.40	5.60	4.60	3.30	3.50	5.3	5.90	0.81	14.00	1.30	3.20	0.31	0.28	12.0	0.26	<160	0.63	0.63
S-2	0-12"	12/12/07	12/17/07	0.44	0.24	0.12	1.50	2.00	1.10	1.30	1.60	2.00	0.28	2.90	0.12	1.10	<0.170	<0.170	1.30	<0.170	0.57	<0.170	<0.170
S-3	0-12"	12/12/07	12/17/07	0.52	<0.170	0.21	1.50	1.40	1.00	1.10	1.50	1.60	0.25	3.50	0.22	1.00	<0.170	<0.170	2.30	<0.170	0.25	<0.170	<0.170
S-4	0-8"	12/12/07	12/17/07	0.24	0.25	<0.160	0.82	0.90	0.69	0.80	1.00	0.88	0.16	1.30	<0.160	0.71	<0.160	<0.160	0.65	1.30	<0.160	<0.160	<0.160
S-5	0-12"	12/12/07	12/17/07	1.20	<0.150	0.41	2.20	1.80	1.30	1.40	1.90	2.20	0.29	5.60	0.37	1.30	0.15	<0.150	4.50	4.20	<0.150	<0.150	0.34
S-6	0-12"	12/12/07	12/17/07	1.90	<0.150	<0.150	0.62	0.68	0.49	0.53	0.71	0.72	<0.150	1.30	<0.150	0.47	<0.150	<0.150	0.60	1.20	<0.150	<0.150	<0.150

NOTES:
(mg/kg)= milligrams per kilogram (parts per million (ppm))
~ = No standard established.
S-1/GW-1 = Massachusetts Contingency Plan (MCP) Method 1 Soil Standard for category S-1 soil (with GW-1/2/3 Groundwater Standards).
S-1/GW-2 = Massachusetts Contingency Plan (MCP) Method 1 Soil Standard for category S-1 soil (with GW-1/2/3 Groundwater Standards).
S-1/GW-3 = Massachusetts Contingency Plan (MCP) Method 1 Soil Standard for category S-1 soil (with GW-1/2/3 Groundwater Standards).
RCS-1 = Reportable Concentration for Category S-1 soils.
UCL= Upper concentration limit
value Bold font indicates concentration exceeding MCP S-1 Soil Standard or RCS-1 Reportable Concentration in absence of compound-specific S-1 Soil Standard.

TABLE 5
SURFICIAL SOIL ANALYTICAL DATA SUMMARY - VOLATILE ORGANIC COMPOUNDS (VOCs)

CHARLESTOWN NAVY YARD
Building 108
Charlestown, Massachusetts

Sample ID	Depth (inches)	Date Sampled	Date Analyzed	1,2,4-Trimethylbenzene (mg/kg)	1,3,5-Trimethylbenzene (mg/kg)	n-Butylbenzene (mg/kg)	sec-Butylbenzene (mg/kg)	Ethylbenzene (mg/kg)	Isopropylbenzene (mg/kg)	p-Isopropyltoluene (p-c (mg/kg)	Naphthalene (mg/kg)	n-Propylbenzene (mg/kg)	Tetrachloroethene (mg/kg)	Toluene (mg/kg)	Trichloroethene (mg/kg)	Xylenes (mg/kg)
S-1	0-12"	12/12/07	12/13/07	<0.064	<0.064	<0.064	<0.064	<0.064	<0.064	<0.064	<0.064	<0.064	<0.064	<0.064	<0.064	<0.194
S-2	0-12"	12/12/07	12/13/07	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075	<0.075	<0.225
S-3	0-12"	12/12/07	12/13/07	<0.062	<0.062	<0.062	<0.062	<0.062	<0.062	<0.062	<0.062	<0.062	<0.062	<0.062	<0.062	<182
S-4	0-8"	12/12/07	12/13/07	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072	<0.212
S-5	0-12"	12/12/07	12/13/07	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.039	<0.118
S-6	0-12"	12/12/07	12/13/07	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047	<0.047	<0.142
RCS-1																
UCL																

NOTES:

(mg/kg) = milligrams per kilogram (parts per million (ppm))

~ = No standard established.

S-1 = Massachusetts Contingency Plan (MCP) Method 1 Soil Standard for category S-1 soil (with GW-1/2/3 Groundwater Standards).

S-2 = Massachusetts Contingency Plan (MCP) Method 1 Soil Standard for category S-2 soil (with GW-1/2/3 Groundwater Standards).

RCS-1 = Reportable Concentration for Category S-1 soils.

UCL= Upper concentration limit.

TABLE 6
BULK SAMPLE ANALYTICAL DATA SUMMARY - ASBESTOS

CHARLESTOWN NAVY YARD
Building 108
Charlestown, Massachusetts

Sample ID	Matrix	Depth (inches)	Date Sampled	Date Analyzed								
					Actinolite % Concentration	Amosite % Concentration	Anthophyllite % Concentration	Chrysotile % Concentration	Crocidolite % Concentration	Tremolite % Concentration		
S-1												
RCS-1												
Imminent Hazard												
UCL												
S-1	SO	0-12"	1/2/08	1/2/08	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
S-3	SO	0-12"	1/2/08	1/2/08	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
S-4	SO	0-8"	1/2/08	1/2/08	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
S-6	SO	0-12"	1/2/08	1/2/08	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
AS-1	SO	Surface	1/2/08	1/2/08	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
AS-2	SO	Surface	1/2/08	1/2/08	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
AS-3	SO	Surface	1/2/08	1/2/08	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
TRI-01	BM	NA	1/2/08	1/2/08	<1.0	<1.0	<1.0	15	<1.0	<1.0	<1.0	
TRI-02	BM	NA	1/2/08	1/2/08	<1.0	<1.0	<1.0	15	<1.0	<1.0	<1.0	
CR1-01	BM	NA	1/2/08	1/2/08	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
CR1-02	BM	NA	1/2/08	1/2/08	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
P1-01	BM	NA	1/2/08	1/2/08	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
P1-02	BM	NA	1/2/08	1/2/08	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
RF1-01	BM	NA	1/2/08	1/2/08	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
RF1-02	BM	NA	1/2/08	1/2/08	<1.0	<1.0	<1.0	Trace	<1.0	<1.0	<1.0	
WG1-01	BM	NA	1/2/08	1/2/08	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
WG1-02	BM	NA	1/2/08	1/2/08	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
RF2-01	BM	NA	1/2/08	1/2/08	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
RF2-01	BM	NA	1/2/08	1/2/08	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	

NOTES:

S-1 = Massachusetts Contingency Plan (MCP) Method 1 Soil Standard for category S-1 soil (with GW-1/2/3 Groundwater Standards).

~ = No standard established.

RCS-1= Reportable Concentration for Category S-1 soils.

SO= Soil.

BM= Building materials.

UCL= Upper concentration limit.

NA= Not Applicable

NE= Not Established

Appendix E1

Soil Analytical Reports – NERL



United States Environmental Protection Agency
Office of Environmental Measurement & Evaluation
11 Technology Drive
North Chelmsford, MA 01863-2431

Laboratory Report

February 15, 2008

Cathy Young - HBR
USEPA New England Region 1
One Congress Street
Boston, MA 02114 - 2023

Project Number: 07120012
Project: Charlestown Navy Yard
Analysis: Metals in Soil Medium Level by ICP
EPA Chemist: Michael Dowling

MD 2/15/08

Analytical Procedure:

All samples were received and logged in by the laboratory according to the USEPA New England Laboratory SOP for Sample Log-in.

Samples were analyzed following the EPA Region I SOP, ELASOP-INGICP6.

Sample preparation was done following the EPA Region I SOP, INGMETALSPREP6.SOP.

Samples were analyzed by inductively coupled plasma - atomic emission spectrometry using pneumatic nebulization. Preparation and analysis SOP's are based on "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition, Revision 2, Final Update III, Methods 3050B and 6010B," respectively.

Date Samples Received by the Laboratory: 12/12/07

Results relate only to the items tested or to the samples as received by the Laboratory. This analytical report shall not be reproduced except in full, without written approval of the laboratory.

Report may contain multiple sections and each section will be numbered independently.

If you have any questions please call me at 617-918-8340

Sincerely,

Per P. Boudreau
20 FEB 2008

Daniel N. Boudreau
Chemistry Team Leader

For
DNB

Qualifiers:

RL	Reporting limit
ND	Not Detected above reporting limit
NA	Not Applicable
NC	Not calculated since analyte concentration is ND
J1	Estimated value due to MS recovery outside acceptance criteria
J2	Estimated value due to LFB result outside acceptance criteria
J3	Estimated value due to RPD result outside acceptance criteria
J4	Estimated value due to LCS result outside acceptance criteria
B	Analyte is associated with the lab blank or trip blank contamination. Values are qualified when the observed concentration of the contamination in the sample extract is less than 10 times the concentration in the blank.
R	No recovery was calculated since the analyte concentration is greater than four times the spike level.

Comments:

The samples were prepared and analyzed by ESAT contractors.

Sample results are in mg/Kg dry wt. units.

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

Metals in Soil Medium Level by ICP

Client Sample ID: S-1 0-12in
Date of Collection: 12/12/2007
Date of Digestion: 12/31/2007
Date of Analysis: 01/07/2008
Volume Digested: N/A

Lab Sample ID: AA77771
Matrix: Soil
Final Volume: 50 mL
Digestate Dilution: 1
pH: N/A

CAS Number	Parameter	Concentration mg/Kg	RL mg/Kg	Qualifier
7429-90-5	Aluminum	7400	20	
7440-36-0	Antimony	ND	9.9	J1
7440-38-2	Arsenic	ND	40	
7440-39-3	Barium	120	3.0	J1
7440-41-7	Beryllium	ND	0.99	
7440-43-9	Cadmium	ND	3.0	
7440-70-2	Calcium	4000	20	
7440-47-3	Chromium	20	3.0	
7440-48-4	Cobalt	7.5	3.0	
7440-50-8	Copper	110	3.0	
7439-89-6	Iron	19000	9.9	
7439-92-1	Lead	360	9.9	J1
7439-95-4	Magnesium	3000	20	
7439-96-5	Manganese	310	4.0	J1
7440-02-0	Nickel	18	5.9	
7782-49-2	Selenium	ND	20	
7440-22-4	Silver	ND	3.0	
7440-28-0	Thallium	ND	40	
7440-62-2	Vanadium	34	3.0	
7440-66-6	Zinc	310	3.0	

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

Metals in Soil Medium Level by ICP

Client Sample ID: S-2 0-12in
Date of Collection: 12/12/2007
Date of Digestion: 12/31/2007
Date of Analysis: 01/07/2008
Volume Digested: N/A

Lab Sample ID: AA77772
Matrix: Soil
Final Volume: 50 mL
Digestate Dilution: 1
pH: N/A

CAS Number	Parameter	Concentration mg/Kg	RL mg/Kg	Qualifier
7429-90-5	Aluminum	8500	20	
7440-36-0	Antimony	ND	9.9	
7440-38-2	Arsenic	ND	40	
7440-39-3	Barium	100	3.0	
7440-41-7	Beryllium	ND	0.99	
7440-43-9	Cadmium	ND	3.0	
7440-70-2	Calcium	6200	20	
7440-47-3	Chromium	40	3.0	J3
7440-48-4	Cobalt	8.6	3.0	
7440-50-8	Copper	130	3.0	
7439-89-6	Iron	20000	9.9	
7439-92-1	Lead	400	9.9	
7439-95-4	Magnesium	2800	20	
7439-96-5	Manganese	360	4.0	
7440-02-0	Nickel	31	5.9	
7782-49-2	Selenium	ND	20	
7440-22-4	Silver	ND	3.0	
7440-28-0	Thallium	ND	40	
7440-62-2	Vanadium	42	3.0	
7440-66-6	Zinc	280	3.0	

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

Metals in Soil Medium Level by ICP

Client Sample ID: S-3 0-12in
Date of Collection: 12/12/2007
Date of Digestion: 12/31/2007
Date of Analysis: 01/07/2008
Volume Digested: N/A

Lab Sample ID: AA77773
Matrix: Soil
Final Volume: 50 mL
Digestate Dilution: 1
pH: N/A

CAS Number	Parameter	Concentration mg/Kg	RL mg/Kg	Qualifier
7429-90-5	Aluminum	8400	20	
7440-36-0	Antimony	ND	10	
7440-38-2	Arsenic	ND	40	
7440-39-3	Barium	82	3.0	
7440-41-7	Beryllium	ND	1.0	
7440-43-9	Cadmium	ND	3.0	
7440-70-2	Calcium	6100	20	
7440-47-3	Chromium	28	3.0	
7440-48-4	Cobalt	7.0	3.0	
7440-50-8	Copper	87	3.0	
7439-89-6	Iron	16000	10	
7439-92-1	Lead	350	10	
7439-95-4	Magnesium	2800	20	
7439-96-5	Manganese	300	4.0	
7440-02-0	Nickel	18	6.1	
7782-49-2	Selenium	ND	20	
7440-22-4	Silver	ND	3.0	
7440-28-0	Thallium	ND	40	
7440-62-2	Vanadium	41	3.0	
7440-66-6	Zinc	250	3.0	

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

Metals in Soil Medium Level by ICP

Client Sample ID: S-4 0-8in
Date of Collection: 12/12/2007
Date of Digestion: 12/31/2007
Date of Analysis: 01/07/2008
Volume Digested: N/A

Lab Sample ID: AA77774
Matrix: Soil
Final Volume: 50 mL
Digestate Dilution: 1
pH: N/A

CAS Number	Parameter	Concentration mg/Kg	RL mg/Kg	Qualifier
7429-90-5	Aluminum	8700	20	
7440-36-0	Antimony	ND	10	
7440-38-2	Arsenic	ND	40	
7440-39-3	Barium	69	3.0	
7440-41-7	Beryllium	ND	1.0	
7440-43-9	Cadmium	ND	3.0	
7440-70-2	Calcium	3600	20	
7440-47-3	Chromium	41	3.0	
7440-48-4	Cobalt	6.3	3.0	
7440-50-8	Copper	41	3.0	
7439-89-6	Iron	15000	10	
7439-92-1	Lead	120	10	
7439-95-4	Magnesium	2900	20	
7439-96-5	Manganese	280	4.0	
7440-02-0	Nickel	19	6.1	
7782-49-2	Selenium	ND	20	
7440-22-4	Silver	ND	3.0	
7440-28-0	Thallium	ND	40	
7440-62-2	Vanadium	53	3.0	
7440-66-6	Zinc	180	3.0	

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

Metals in Soil Medium Level by ICP

Client Sample ID: S-5 0-12in
Date of Collection: 12/12/2007
Date of Digestion: 12/31/2007
Date of Analysis: 01/07/2008
Volume Digested: N/A

Lab Sample ID: AA77775
Matrix: Soil
Final Volume: 50 mL
Digestate Dilution: 1
pH: N/A

CAS Number	Parameter	Concentration mg/Kg	RL mg/Kg	Qualifier
7429-90-5	Aluminum	8400	20	
7440-36-0	Antimony	20	10	
7440-38-2	Arsenic	ND	40	
7440-39-3	Barium	690	3.0	
7440-41-7	Beryllium	ND	1.0	
7440-43-9	Cadmium	7.7	3.0	
7440-70-2	Calcium	6000	20	
7440-47-3	Chromium	48	3.0	
7440-48-4	Cobalt	11	3.0	
7440-50-8	Copper	100	3.0	
7439-89-6	Iron	18000	10	
7439-92-1	Lead	2700	10	
7439-95-4	Magnesium	3500	20	
7439-96-5	Manganese	340	4.0	
7440-02-0	Nickel	20	6.0	
7782-49-2	Selenium	ND	20	
7440-22-4	Silver	ND	3.0	
7440-28-0	Thallium	ND	40	
7440-62-2	Vanadium	44	3.0	
7440-66-6	Zinc	3200	3.0	

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

Metals in Soil Medium Level by ICP

Client Sample ID: S-6 0-12in
Date of Collection: 12/12/2007
Date of Digestion: 12/31/2007
Date of Analysis: 01/07/2008
Volume Digested: N/A

Lab Sample ID: AA77776
Matrix: Soil
Final Volume: 50 mL
Digestate Dilution: 1
pH: N/A

CAS Number	Parameter	Concentration mg/Kg	RL mg/Kg	Qualifier
7429-90-5	Aluminum	6700	20	
7440-36-0	Antimony	ND	10	
7440-38-2	Arsenic	ND	40	
7440-39-3	Barium	53	3.0	
7440-41-7	Beryllium	ND	1.0	
7440-43-9	Cadmium	ND	3.0	
7440-70-2	Calcium	3700	20	
7440-47-3	Chromium	16	3.0	
7440-48-4	Cobalt	5.8	3.0	
7440-50-8	Copper	46	3.0	
7439-89-6	Iron	14000	10	
7439-92-1	Lead	140	10	
7439-95-4	Magnesium	2300	20	
7439-96-5	Manganese	260	4.0	
7440-02-0	Nickel	13	6.0	
7782-49-2	Selenium	ND	20	
7440-22-4	Silver	ND	3.0	
7440-28-0	Thallium	ND	40	
7440-62-2	Vanadium	25	3.0	
7440-66-6	Zinc	140	3.0	

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

Laboratory Reagent Blank

Client Sample ID: N/A
Date of Collection: N/A
Date of Digestion: 12/31/2007
Date of Analysis: 01/07/2008
Volume Digested: 50 mL

Lab Sample ID: N/A
Matrix: Water
Final Volume: 50 mL
Digestate Dilution: 1
pH: N/A

CAS Number	Parameter	Concentration ug/L	RL ug/L	Qualifier
7429-90-5	Aluminum	ND	200	
7440-36-0	Antimony	ND	100	
7440-38-2	Arsenic	ND	400	
7440-39-3	Barium	ND	30	
7440-41-7	Beryllium	ND	10	
7440-43-9	Cadmium	ND	30	
7440-70-2	Calcium	1400	200	
7440-47-3	Chromium	ND	30	
7440-48-4	Cobalt	ND	30	
7440-50-8	Copper	ND	30	
7439-89-6	Iron	ND	100	
7439-92-1	Lead	ND	100	
7439-95-4	Magnesium	ND	200	
7439-96-5	Manganese	ND	40	
7440-02-0	Nickel	ND	60	
7782-49-2	Selenium	ND	200	
7440-22-4	Silver	ND	30	
7440-28-0	Thallium	ND	400	
7440-62-2	Vanadium	ND	30	
7440-66-6	Zinc	52	30	

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

METALS MATRIX SPIKE (MS) RESULTS

Charlestown Navy Yard

Sample ID: AA77771

PARAMETER	SPIKE ADDED mg/Kg	SAMPLE CONCENTRATION mg/Kg	MS CONCENTRATION mg/Kg	MS % REC	QC LIMITS (% REC)
Antimony	99.0	ND	38.9	39	75 - 125
Arsenic	99.0	ND	105	106	75 - 125
Barium	99.0	120	263	144	75 - 125
Beryllium	39.6	ND	38.5	97	75 - 125
Cadmium	49.5	ND	45.8	93	75 - 125
Chromium	99.0	20	114	95	75 - 125
Cobalt	99.0	7.5	99.6	93	75 - 125
Copper	99.0	110	203	94	75 - 125
Lead	99.0	360	488	129	75 - 125
Manganese	99.0	310	373	64	75 - 125
Nickel	99.0	18	108	91	75 - 125
Selenium	99.0	ND	89.9	91	75 - 125
Silver	19.8	ND	18.4	93	75 - 125
Thallium	99.0	ND	92.7	94	75 - 125
Vanadium	99.0	34	131	98	75 - 125
Zinc	99.0	310	415	106	75 - 125

Comments:

Samples in Batch: AA77771, AA77772, AA77773, AA77774, AA77775, AA77776

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Laboratory Duplicate Results

Charlestown Navy Yard

Sample ID: AA77772

PARAMETER	SAMPLE RESULT mg/Kg	SAMPLE DUPLICATE RESULT mg/Kg	PRECISION RPD %	QC LIMITS
Aluminum	8500	8400	1	30
Antimony	ND	ND	NC	30
Arsenic	ND	ND	NC	30
Barium	100	90	11	30
Beryllium	ND	ND	NC	30
Cadmium	ND	ND	NC	30
Calcium	6200	6000	3	30
Chromium	40	76	62	30
Cobalt	8.6	7.9	9	30
Copper	130	130	0	30
Iron	20000	19000	5	30
Lead	400	540	30	30
Magnesium	2800	2800	0	30
Manganese	360	320	12	30
Nickel	31	33	6	30
Selenium	ND	ND	NC	30
Silver	ND	ND	NC	30
Thallium	ND	ND	NC	30
Vanadium	42	44	5	30
Zinc	280	300	7	30

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Laboratory Fortified Blank (LFB) Results

Charlestown Navy Yard

PARAMETER	LFB AMOUNT SPIKED ug/L	LFB RESULT ug/L	LFB RECOVERY %	QC LIMITS %
Aluminum	1000	885	89	85 - 115
Antimony	1000	882	88	85 - 115
Arsenic	1000	951	95	85 - 115
Barium	1000	964	96	85 - 115
Beryllium	400	365	91	85 - 115
Cadmium	500	461	92	85 - 115
Calcium	10000	9160	92	85 - 115
Chromium	1000	922	92	85 - 115
Cobalt	1000	914	91	85 - 115
Copper	1000	931	93	85 - 115
Iron	1000	913	91	85 - 115
Lead	1000	905	91	85 - 115
Magnesium	10000	9010	90	85 - 115
Manganese	1000	927	93	85 - 115
Nickel	1000	893	89	85 - 115
Selenium	1000	904	90	85 - 115
Silver	200	187	94	85 - 115
Thallium	1000	969	97	85 - 115
Vanadium	1000	944	94	85 - 115
Zinc	1000	960	96	85 - 115

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Solid Laboratory Control Sample (LCS) Results

Charlestown Navy Yard

PARAMETER	LCS RESULTS mg/Kg	CONTROL LIMITS mg/Kg
Aluminum	8790	4820 - 13400
Antimony	86.2	0 - 238
Arsenic	150	116 - 186
Barium	271	223 - 321
Beryllium	99.8	83.7 - 121
Cadmium	89.5	76.3 - 114
Calcium	6630	5530 - 8170
Chromium	121	96.6 - 143
Cobalt	65.6	54.7 - 79.9
Copper	82.0	64.9 - 101
Iron	15900	8880 - 24400
Lead	114	94.1 - 145
Magnesium	2470	2020 - 3160
Manganese	371	313 - 455
Nickel	98.9	81.0 - 123
Selenium	137	107 - 169
Silver	92.7	64.2 - 129
Thallium	172	132 - 208
Vanadium	129	99.5 - 159
Zinc	112	92.5 - 142

Comments:



SPECTRUM ANALYTICAL, INC.
Framingham
MA 01702

CHAIN OF CUSTODY RECORD

Page 1 of 1

CHAIN OF CUSTODY RECORD

Special Handling:

- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- ☐ All TATs subject to laboratory approval.
- ☐ Min. 24-hour notification needed for rushes.
- ☐ Samples disposed of after 60 days unless otherwise instructed.

Report To: Spectrum Consulting Inc.

Invoice To: EPA - Region I

Project No: EG004-003

Site Name: Charlestown Navy Yard

Location: Charlestown State: MA

Project Mgr.: Shawn Rising

P.O. No.: _____

Sample(s): S. Rising

1= Na_2SO_3 2= HCl 3= H_2SO_4 4= HNO_3 5= NaOH 6=Ascorbic Acid
7= CH_3OH 8= NaHSO_4 9=Ice 10=_____

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW=Surface Water SO=Soil SL=Sludge A=Air
X1=_____ X2=_____ X3=_____

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Preservative	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	Containers:	Analyses:	QA Reporting Notes: (check if needed)	QA Reporting Level <input type="checkbox"/> Standard <input type="checkbox"/> No QC <input type="checkbox"/> Other _____
	S-1 6-12"	12/12/07	8:30am	C	SO	7/9	3	4				X VOC's via 8260B		
	S-2 0-12"		8:45am	C	SO	1	3	4				X SVOC w/TIC's		
	S-3 0-12"		9:00am	C	SO	1	3	4				X RCRA-8 Total Metals		
	S-4 0-8"		9:15am	C	SO	1	3	4				X Mercury (Separate container)		
	S-5 0-12"		9:30am	C	SO	1	3	4				X Asbestos (TEM)		
	S-6 0-12"		9:45am	C	SO	1	3	4						
	AS-1 surface		10:00am	C	SO	1						X		
	AS-2 surface		10:15am	C	SO	1						X		
	AS-3 surface			C	SO	1						X		
	ketone blank			C	SO	1						X		

Relinquished by: _____

Received by: _____

Date: _____ Time: _____

☐ Fax results when available to () _____

☒ E-mail to SRISING@SVC.COM

Condition upon receipt: ☒ Packed ☐ Ambient ☐ °C _____

Shawn Rising Catherine Young
12/12 1:30pm
12/12/07 2:30pm



United States Environmental Protection Agency
Office of Environmental Measurement & Evaluation
11 Technology Drive
North Chelmsford, MA 01863-2431

Laboratory Results

January 15, 2008

Cathy Young - HBR
USEPA New England Region 1
One Congress Street
Boston, MA 02114 - 2023

Project Number: 07120012
Project: Charlestown Navy Yard
Analysis: Total Mercury in Soil
EPA Chemist: Janet Paquin
J.P. 1/17/08

Analytical Procedure:

All samples were received and logged in by the laboratory according to the USEPA New England Laboratory SOP for Sample Log-in.

Sample preparation and analysis was done following the EPA Region I SOP, EIASOP-INGMERC7.

Analysis was performed using a Leeman Labs PS200 II Automated Cold Vapor Atomic Absorption Spectrometer.

Results are reported on a dry weight basis.

Samples were prepared and analyzed by ESAT contractors working at the USEPA New England Laboratory.

Date Samples Received by the Laboratory: 12/12/2007

Results relate only to the items tested or to the samples as received by the Laboratory. This analytical report shall not be reproduced except in full, without written approval of the laboratory.

Report may contain multiple sections and each section will be numbered independently.

If you have any questions please call me at 617-918-8340 .

Sincerely, *PERZ AtulBeck* 22-JAN-2008
For

Daniel N. Boudreau *DNB*
Chemistry Team Leader

Data Qualifiers:

RL	Reporting limit
ND	Not Detected above reporting limit
NA	Not Applicable
NC	Not calculated since analyte concentration is ND
J1	Estimated value due to MS recovery outside acceptance criteria
J2	Estimated value due to LFB result outside acceptance criteria
J3	Estimated value due to RPD result outside acceptance criteria
J4	Estimated value due to LCS result outside acceptance criteria
B	Analyte is associated with the lab blank or trip blank contamination. Values are qualified when the observed concentration of the contamination in the sample extract is less than 10 times the concentration in the blank.
R	No recovery was calculated since the analyte concentration is greater than four times the spike level.
LRB	Laboratory Reagent Blank
RPD	Relative Percent Difference

**US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY**

Charlestown Navy Yard

Total Mercury in Soil

Matrix: Soil

Sample Number	Lab ID	Collection Date	Digestion Date	Analysis Date	Concentration ug/g	RL ug/g	Qualifier
S-1 0-12in Comments:	AA77771	12/12/2007	01/09/2008	01/09/2008	0.76	0.061	
S-2 0-12in Comments:	AA77772	12/12/2007	12/17/2007	12/18/2007	0.95	0.61	
S-3 0-12in Comments:	AA77773	12/12/2007	12/17/2007	12/18/2007	0.72	0.061	
S-4 0-8in Comments:	AA77774	12/12/2007	12/17/2007	12/18/2007	0.40	0.061	
S-5 0-12in Comments:	AA77775	12/12/2007	12/17/2007	12/18/2007	1.8	0.61	
S-6 0-12in Comments:	AA77776	12/12/2007	12/17/2007	12/18/2007	0.28	0.062	
LRB Comments:			12/17/2007	12/18/2007	ND (ug/L)	0.50	
LRB Comments:			01/09/2008	01/09/2008	ND(ug/L)	0.50	

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

MATRIX SPIKE (MS) RESULTS

Charlestown Navy Yard - Charlestown, MA

Sample ID: AA77771

01/09/08

PARAMETER	SPIKE ADDED ug/g	SAMPLE CONCENTRATION ug/g	MS CONCENTRATION ug/g	MS % REC	QC LIMITS (% REC)
Total Mercury in Soil	0.24	0.76	1.0	100	75 - 125

Comments:

LABORATORY DUPLICATE RESULTS

Charlestown Navy Yard - Charlestown, MA

Sample ID: AA77771

01/09/08

PARAMETER	SAMPLE RESULT ug/g	SAMPLE DUPLICATE RESULT ug/g	PRECISION RPD %	QC LIMITS RPD (%)
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Total Mercury in Soil	0.76	0.75	1.3	30
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Comments:

Sample ID: AA77774

12/18/07

PARAMETER	SAMPLE RESULT ug/g	SAMPLE DUPLICATE RESULT ug/g	PRECISION RPD %	QC LIMITS RPD (%)
-----------	--------------------------	------------------------------------	-----------------------	-------------------------

Total Mercury in Soil	0.40	0.41	2.5	30
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Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Laboratory Fortified Blank (LFB) Results

Charlestown Navy Yard - Charlestown, MA

12/18/07

PARAMETER	LFB AMOUNT SPIKED ug/L	LFB RESULT ug/L	LFB RECOVERY %	QC LIMITS %
Total Mercury in Soil	2.0	2.0	95	85 - 115

Comments:

Samples in Batch: AA77772, AA77773, AA77774, AA77775, AA77776

Charlestown Navy Yard - Charlestown, MA

01/09/08

PARAMETER	LFB AMOUNT SPIKED ug/L	LFB RESULT ug/L	LFB RECOVERY %	QC LIMITS %
Total Mercury in Soil	2.0	2.1	105	85 - 115

Comments:

Samples in Batch: AA77771

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Laboratory Control Standard Sample (LCS) Results

Charlestown Navy Yard - Charlestown, MA

12/18/07

PARAMETER	LCS RESULT ug/g	QC LIMITS ug/g
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Total Mercury in Soil	6.0	3.83 - 7.69
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Comments:

Samples in Batch: AA77772, AA77773, AA77774, AA77775, AA77776

Charlestown Navy Yard - Charlestown, MA

01/09/08

PARAMETER	LCS RESULT ug/g	QC LIMITS ug/g
-----------	-----------------------	----------------------

Total Mercury in Soil	5.9	3.83 - 7.69
-----------------------	-----	-------------

Comments:

Samples in Batch: AA77771



United States Environmental Protection Agency
Office of Environmental Measurement & Evaluation
11 Technology Drive
North Chelmsford, MA 01863-2431

Laboratory Report

December 21, 2007

Cathy Young - HBR
USEPA New England Region 1
One Congress Street
Boston, MA 02114 - 2023

Project Number: 07120012
Project: Charlestown Navy Yard
Analysis: PCBs Medium Level in Soils and Sediments
Analyst: Paul Carroll *Paul Carroll 12.21.07*

Analytical Procedure:

All samples were received and logged in by the laboratory according to the USEPA New England Laboratory SOP for Sample Log-in.

Sample preparation and analysis was done following the EPA Region I SOP, PESTSOIL2.SOP.

The analysis was performed using high resolution capillary column chromatography on an Agilent 6890 Series gas chromatograph equipped with dual electron capture detectors. The 30 meter dual capillary column system consists of a J&W DB-5 and J&W DB-1701, both with 0.25mm ID and 0.25 micron film thickness.

The results are reported on a dry weight basis.

Date Samples Received by the Laboratory: 12/12/07

Results relate only to the items tested or to the samples as received by the Laboratory. This analytical report shall not be reproduced except in full, without written approval of the laboratory.

Report may contain multiple sections and each section will be numbered independently.

If you have any questions please call me at 617-918-8340.

Sincerely,

Daniel N. Boudreau 1/2/08
Daniel N. Boudreau
Chemistry Team Leader

Qualifiers	RL	Reporting limit
	ND	Not Detected above Reporting limit
	NA	Not Applicable due to high sample dilutions or sample interferences
	J	Estimated value
	E	Estimated value exceeds the calibration range
	L	Estimated value is below the calibration range
	B	Analyte is associated with the lab blank or trip blank contamination. Values are qualified when the observed concentration of the contamination in the sample extract is less than 10 times the concentration in the blank.
	P	The confirmation value exceeded 35% difference and is less than 100%. The lower value is reported.
	C	The identification has been confirmed by GC/MS.
	R	No recovery was calculated since the analyte concentration is greater than four times the spike level.

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

PCBs Medium Level in Soils and Sediments

Client Sample ID: S-1 0-12in
Date of Collection: 12/12/2007
Date of Extraction: 12/13/07
Date of Analysis: 12/18/07
Dry Weight Extracted: 4.50 grams
Wet Weight Extracted: 5.42 grams

Lab Sample ID: AA77771
Matrix: Soil
Final Volume: 5 mL
Percent Solids: 83%
Extract Dilution: 1

CAS Number	Compound	Concentration mg/Kg	RL mg/Kg	Qualifier
12674-11-2	Aroclor-1016	ND	0.11	
11104-28-2	Aroclor-1221	ND	0.11	
11141-16-5	Aroclor-1232	ND	0.11	
53469-21-9	Aroclor-1242	ND	0.11	
12672-29-6	Aroclor-1248	ND	0.11	
11097-69-1	Aroclor-1254	ND	0.11	
11096-82-5	Aroclor-1260	0.11	0.11	
11100-14-4	Aroclor-1262	ND	0.11	
37324-23-5	Aroclor-1268	ND	0.11	

Surrogate Compounds	Recoveries (%)	QC Ranges
2,4,5,6-Tetrachloro-m-xylene	73	36 - 131
Decachlorobiphenyl	89	30 - 165

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

PCBs Medium Level in Soils and Sediments

Client Sample ID: S-2 0-12in
Date of Collection: 12/12/2007
Date of Extraction: 12/13/07
Date of Analysis: 12/18/07
Dry Weight Extracted: 4.33 grams
Wet Weight Extracted: 5.61 grams

Lab Sample ID: AA77772
Matrix: Soil
Final Volume: 5 mL
Percent Solids: 77%
Extract Dilution: 1

CAS Number	Compound	Concentration mg/Kg	RL mg/Kg	Qualifier
12674-11-2	Aroclor-1016	ND	0.12	
11104-28-2	Aroclor-1221	ND	0.12	
11141-16-5	Aroclor-1232	ND	0.12	
53469-21-9	Aroclor-1242	ND	0.12	
12672-29-6	Aroclor-1248	ND	0.12	
11097-69-1	Aroclor-1254	ND	0.12	
11096-82-5	Aroclor-1260	0.33	0.12	
11100-14-4	Aroclor-1262	ND	0.12	
37324-23-5	Aroclor-1268	ND	0.12	

Surrogate Compounds	Recoveries (%)	QC Ranges
2,4,5,6-Tetrachloro-m-xylene	71	36 - 131
Decachlorobiphenyl	146	30 - 165

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

PCBs Medium Level in Soils and Sediments

Client Sample ID: S-3 0-12in
Date of Collection: 12/12/2007
Date of Extraction: 12/13/07
Date of Analysis: 12/18/07
Dry Weight Extracted: 4.74 grams
Wet Weight Extracted: 6.06 grams

Lab Sample ID: AA77773
Matrix: Soil
Final Volume: 5 mL
Percent Solids: 78%
Extract Dilution: 1

CAS Number	Compound	Concentration mg/Kg	RL mg/Kg	Qualifier
12674-11-2	Aroclor-1016	ND	0.11	
11104-28-2	Aroclor-1221	ND	0.11	
11141-16-5	Aroclor-1232	ND	0.11	
53469-21-9	Aroclor-1242	ND	0.11	
12672-29-6	Aroclor-1248	ND	0.11	
11097-69-1	Aroclor-1254	ND	0.11	
11096-82-5	Aroclor-1260	0.26	0.11	
11100-14-4	Aroclor-1262	ND	0.11	
37324-23-5	Aroclor-1268	ND	0.11	

Surrogate Compounds	Recoveries (%)	QC Ranges
2,4,5,6-Tetrachloro-m-xylene	78	36 - 131
Decachlorobiphenyl	94	30 - 165

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

PCBs Medium Level in Soils and Sediments

Client Sample ID: S-4 0-8in
Date of Collection: 12/12/2007
Date of Extraction: 12/13/07
Date of Analysis: 12/18/07
Dry Weight Extracted: 4.32 grams
Wet Weight Extracted: 5.45 grams

Lab Sample ID: AA77774
Matrix: Soil
Final Volume: 5 mL
Percent Solids: 79%
Extract Dilution: 1

CAS Number	Compound	Concentration mg/Kg	RL mg/Kg	Qualifier
12674-11-2	Aroclor-1016	ND	0.12	
11104-28-2	Aroclor-1221	ND	0.12	
11141-16-5	Aroclor-1232	ND	0.12	
53469-21-9	Aroclor-1242	ND	0.12	
12672-29-6	Aroclor-1248	ND	0.12	
11097-69-1	Aroclor-1254	ND	0.12	
11096-82-5	Aroclor-1260	ND	0.12	
11100-14-4	Aroclor-1262	ND	0.12	
37324-23-5	Aroclor-1268	ND	0.12	

Surrogate Compounds	Recoveries (%)	QC Ranges
2,4,5,6-Tetrachloro-m-xylene	70	36 - 131
Decachlorobiphenyl	82	30 - 165

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

PCBs Medium Level in Soils and Sediments

Client Sample ID: S-5 0-12in
Date of Collection: 12/12/2007
Date of Extraction: 12/13/07
Date of Analysis: 12/18/07
Dry Weight Extracted: 5.39 grams
Wet Weight Extracted: 6.22 grams

Lab Sample ID: AA77775
Matrix: Soil
Final Volume: 5 mL
Percent Solids: 87%
Extract Dilution: 1

CAS Number	Compound	Concentration mg/Kg	RL mg/Kg	Qualifier
12674-11-2	Aroclor-1016	ND	0.09	
11104-28-2	Aroclor-1221	ND	0.09	
11141-16-5	Aroclor-1232	ND	0.09	
53469-21-9	Aroclor-1242	ND	0.09	
12672-29-6	Aroclor-1248	ND	0.09	
11097-69-1	Aroclor-1254	ND	0.09	
11096-82-5	Aroclor-1260	0.12	0.09	
11100-14-4	Aroclor-1262	ND	0.09	
37324-23-5	Aroclor-1268	ND	0.09	

Surrogate Compounds	Recoveries (%)	QC Ranges
2,4,5,6-Tetrachloro-m-xylene	75	36 - 131
Decachlorobiphenyl	89	30 - 165

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

PCBs Medium Level in Soils and Sediments

Client Sample ID: S-6 0-12in
Date of Collection: 12/12/2007
Date of Extraction: 12/13/07
Date of Analysis: 12/17/07
Dry Weight Extracted: 5.27 grams
Wet Weight Extracted: 5.94 grams

Lab Sample ID: AA77776
Matrix: Soil
Final Volume: 5.mL
Percent Solids: 89%
Extract Dilution: 1

CAS Number	Compound	Concentration mg/Kg	RL mg/Kg	Qualifier
12674-11-2	Aroclor-1016	ND	0.09	
11104-28-2	Aroclor-1221	ND	0.09	
11141-16-5	Aroclor-1232	ND	0.09	
53469-21-9	Aroclor-1242	ND	0.09	
12672-29-6	Aroclor-1248	ND	0.09	
11097-69-1	Aroclor-1254	ND	0.09	
11096-82-5	Aroclor-1260	0.12	0.09	
11100-14-4	Aroclor-1262	ND	0.09	
37324-23-5	Aroclor-1268	ND	0.09	

Surrogate Compounds	Recoveries (%)	QC Ranges
2,4,5,6-Tetrachloro-m-xylene	78	36 - 131
Decachlorobiphenyl	91	30 - 165

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

Laboratory Blank

Client Sample ID: N/A
Date of Collection: N/A
Date of Extraction: 12/13/07
Date of Analysis: 12/17/07
Dry Weight Extracted: 5.62 grams
Wet Weight Extracted: 5.63 grams

Lab Sample ID: N/A
Matrix: Soil
Final Volume: 5 mL
Percent Solids: 100%
Extract Dilution: 1

CAS Number	Compound	Concentration mg/Kg	RL mg/Kg	Qualifier
12674-11-2	Aroclor-1016	ND	0.09	
11104-28-2	Aroclor-1221	ND	0.09	
11141-16-5	Aroclor-1232	ND	0.09	
53469-21-9	Aroclor-1242	ND	0.09	
12672-29-6	Aroclor-1248	ND	0.09	
11097-69-1	Aroclor-1254	ND	0.09	
11096-82-5	Aroclor-1260	ND	0.09	
11100-14-4	Aroclor-1262	ND	0.09	
37324-23-5	Aroclor-1268	ND	0.09	

Surrogate Compounds	Recoveries (%)	QC Ranges
2,4,5,6-Tetrachloro-m-xylene	82	36 - 131
Decachlorobiphenyl	91	30 - 165

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

PCB MATRIX SPIKE (MS) / MATRIX SPIKE DUPLICATE (MSD) RECOVERY

Charlestown Navy Yard

Sample ID: AA77776

PARAMETER	SPIKE ADDED mg/Kg	SAMPLE CONCENTRATION mg/Kg	MS CONCENTRATION mg/Kg	MS % REC	QC LIMITS (% REC)
Aroclor-1016	0.58	ND	0.48	83.48	70 - 130
Aroclor-1260	0.58	0.12	0.59	81.74	53 - 130

PARAMETER	MSD SPIKE ADDED	MSD CONCENTRATION mg/Kg	MSD % REC	RPD %	QC LIMITS RPD
Aroclor-1016	0.65	0.58	89.23	7	50
Aroclor-1260	0.65	0.71	90.77	10	50

Samples in Batch: AA77771, AA77772, AA77773, AA77774, AA77775, AA77776

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

LABORATORY DUPLICATE RESULTS

Charlestown Navy Yard

Sample ID: AA77776

PARAMETER	SAMPLE RESULT mg/Kg	SAMPLE DUPLICATE RESULT mg/Kg	PRECISION RPD %	QC LIMITS
Aroclor-1016	ND	ND	ND	50
Aroclor-1221	ND	ND	ND	50
Aroclor-1232	ND	ND	ND	50
Aroclor-1242	ND	ND	ND	50
Aroclor-1248	ND	ND	ND	50
Aroclor-1254	ND	ND	ND	50
Aroclor-1260	0.12	0.12	0.0	50
Aroclor-1262	ND	ND	ND	50
Aroclor-1268	ND	ND	ND	50



United States Environmental Protection Agency
Office of Environmental Measurement & Evaluation
11 Technology Drive
North Chelmsford, MA 01863-2431

Laboratory Report

January 07, 2008

Cathy Young - HBR
USEPA New England Region 1
One Congress Street
Boston, MA 02114 - 2023

Project Number: 07120012

Project: Charlestown Navy Yard

Analysis: BNAs in Soils Medium Level

Analyst: Inna Germansderfer

LG 1/7/08

Analytical Procedure:

All samples were received and logged in by the laboratory according to the USEPA New England Laboratory SOP for Sample Log-in.

Sample preparation and analysis was done following the EPA Region I SOP, EIASOP-BNAS1.

Samples were prepared using pressurized fluid extraction. The samples were analyzed using high resolution capillary column chromatography and quadrapole mass spectrometry (GC/MS). The SOP for this analysis is based on US EPA SW-846 methods 3545A and 8270C and EIASOP-BNAGCMS6.

Date Samples Received by the Laboratory: 12/12/07

Results relate only to the items tested or to the samples as received by the Laboratory. This analytical report shall not be reproduced except in full, without written approval of the laboratory.

Report may contain multiple sections and each section will be numbered independently.

If you have any questions please call me at 617-918-8340 .

Sincerely,

Peter Philbrook For

Daniel N. Boudreau
Chemistry Team Leader

DNB

Qualifiers

RL = Reporting limit

ND = Not Detected above Reporting limit

NA = Not Applicable due to high sample dilutions or sample interferences

NC = Not calculated since analyte concentration is ND.

J = Estimated value

E = Estimated value exceeds the calibration range

L = Estimated value is below the calibration range

B = Analyte is associated with the lab blank or trip blank contamination. Values are qualified when the observed concentration of the contamination in the sample extract is less than 5 times the concentration in the blank.

R = No recovery was calculated since the analyte concentration is greater than four times the spike level.

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard
BNAs in Soils Medium Level

Client Sample ID: S-1 0-12in
Date of Collection: 12/12/2007
Date of Extraction: 12/12/07
Date of Analysis: 12/17/07
Dry Weight Extracted: 16.063 grams
Wet Weight Extracted: 20.067 grams
Final Volume: 1 mL

Lab Sample ID: AA77771
Matrix: Soil
Volume Extracted: N/A
Percent Solids: 80%
Extract Dilution: 1
pH: N/A
GPC Factor: N/A

CAS Number	Compound	Concentration ug/Kg	RL ug/Kg	Qualifier
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	160	
120-82-1	1,2,4-Trichlorobenzene	ND	160	
95-50-1	1,2-Dichlorobenzene	ND	160	
541-73-1	1,3-Dichlorobenzene	ND	160	
99-65-0	1,3-Dinitrobenzene	ND	160	
106-46-7	1,4-Dichlorobenzene	ND	160	
130-15-4	1,4-Naphthoquinone	ND	310	
90-12-0	1-Methylnaphthalene	260	160	
108-60-1	2,2'-oxybis(1-chloropropane)	ND	160	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	160	
95-95-4	2,4,5-Trichlorophenol	ND	160	
88-06-2	2,4,6-Trichlorophenol	ND	160	
120-83-2	2,4-Dichlorophenol	ND	160	
51-28-5	2,4-Dinitrophenol	ND	310	
121-14-2	2,4-Dinitrotoluene	ND	160	
105-67-9	2,4-dimethylphenol	ND	160	
87-65-0	2,6-Dichlorophenol	ND	160	
606-20-2	2,6-Dinitrotoluene	ND	160	
91-58-7	2-Chloronaphthalene	ND	160	
95-57-8	2-Chlorophenol	ND	160	
91-57-6	2-Methylnaphthalene	280	160	
95-48-7	2-Methylphenol	ND	160	
88-74-4	2-Nitroaniline	ND	160	
88-75-5	2-Nitrophenol	ND	160	
108-39-4/106-44-	3&4-Methylphenol	ND	310	
91-94-1	3,3'-Dichlorobenzidine	ND	160	
56-49-5	3-Methylcholanthrene	ND	160	
99-09-2	3-Nitroaniline	ND	160	
534-52-1	4,6-Dinitro-2-methylphenol	ND	310	
101-55-3	4-Bromophenyl-phenylether	ND	160	
59-50-7	4-Chloro-3-methylphenol	ND	160	
106-47-8	4-Chloroaniline	ND	160	
7005-72-3	4-Chlorophenyl-phenylether	ND	160	
100-01-6	4-Nitroaniline	ND	160	
100-02-7	4-Nitrophenol	ND	310	
56-57-5	4-nitroquinoline-1-oxide	ND	620	
83-32-9	Acenaphthene	1400	160	
208-96-8	Acenaphthylene	220	160	
98-86-2	Acetophenone	ND	160	
62-53-3	Aniline	ND	160	
120-12-7	Anthracene	2600	800	

140-57-8	Aramite	ND	160
103-33-3	Azobenzene	ND	160
92-87-5	Benzidine	ND	160
56-55-3	Benzo(a)anthracene	5600	800
50-32-8	Benzo(a)pyrene	5300	800
205-99-2	Benzo(b)fluoranthene	4600	160
191-24-2	Benzo(g,h,i)perylene	3300	160
207-08-9	Benzo(k)fluoranthene	3500	160
65-85-0	Benzoic acid	ND	310
100-51-6	Benzyl alcohol	ND	160
111-44-4	Bis(2-Chloroethyl)ether	ND	160
117-81-7	Bis(2-ethylhexyl)phthalate	ND	160
85-68-7	Butylbenzylphthalate	ND	160
86-74-8	Carbazole	1200	800
510-15-6	Chlorobenzilate	ND	160
218-01-9	Chrysene	5900	800
84-74-2	Di-n-butylphthalate	ND	160
117-84-0	Di-n-octyl phthalate	ND	160
53-70-3	Dibenz(a,h)anthracene	810	160
132-64-9	Dibenzofuran	630	160
84-66-2	Diethylphthalate	ND	160
131-11-3	Dimethyl phthalate	ND	160
88-85-7	Dinoseb	ND	160
62-50-0	Ethyl methanesulfonate	ND	160
206-44-0	Fluoranthene	14000	800
86-73-7	Fluorene	1300	160
118-74-1	Hexachlorobenzene	ND	160
87-68-3	Hexachlorobutadiene	ND	160
77-47-4	Hexachlorocyclopentadiene	ND	160
67-72-1	Hexachloroethane	ND	160
1888-71-7	Hexachloropropene	ND	160
193-39-5	Indeno(1,2,3-cd)pyrene	3200	160
465-73-6	Isodrin	ND	160
78-59-1	Isophorone	ND	160
120-58-1	Isosafrole	ND	160
143-50-0	Kepone	ND	160
66-27-3	Methyl methanesulfonate	ND	160
86-30-6	N-Nitrosodiphenylamine	ND	160
621-64-7	N-nitroso-di-n-propylamine	ND	160
62-75-9	N-nitrosodimethylamine	ND	310
91-20-3	Naphthalene	310	160
98-95-3	Nitrobenzene	ND	160
608-93-5	Pentachlorobenzene	ND	160
82-68-8	Pentachloronitrobenzene	ND	160
87-86-5	Pentachlorophenol	ND	620
62-44-2	Phenacetin	ND	160
85-01-8	Phenanthrene	12000	160
108-95-2	Phenol	ND	160
129-00-0	Pyrene	12000	800
110-86-1	Pyridine	ND	310
94-59-7	Safrole	ND	160
111-91-1	bis(-2-Chloroethoxy)methane	ND	160

Surrogate Compounds	Recoveries (%)	QC Ranges
2-Fluorophenol (SS1)	65	39 - 106
Phenol-d6 (SS2)	63	38 - 92
Nitrobenzene-d5 (SS3)	65	31 - 102
2,4,6-Tribromophenol (SS5)	63	35 - 102
p-Terphenyl-d14 (SS6)	75	41 - 106
2-Fluorobiphenyl (SS4)	70	39 - 103

Comments: Sample was run without dilution and rerun in the same sequence with 5x dilution to report phenanthrene, anthracene, fluoranthene, benzo(a)anthracene, chrysene, benzo(a)pyrene and pyrene. Data from original run was used to report rest of target analytes.

Tentatively Identified non-Target Compounds, ppb

1,1'-Biphenyl, 2-methyl-	600 J
Anthracene, 1,2,3,4-tetrahydro-	620 J
Dibenzothiophene	600 J
Dibenzo[b,e]7,8-diazobiscyclo[2.2.2]octa-2,5-diene	2400 J
Phenanthrene, 1-methyl-	1300 J
Phenanthrene, 2-methyl-	1600 J
Anthracene, 2-methyl-	700 J
4H-Cyclopenta[def]phenanthrene	3000 J
Naphthalene, 2-phenyl-	1200 J
9,10-Anthracenedione	1000 J

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard
BNAs in Soils Medium Level

Client Sample ID: S-2 0-12in
Date of Collection: 12/12/2007
Date of Extraction: 12/12/07
Date of Analysis: 12/17/07
Dry Weight Extracted: 14.983 grams
Wet Weight Extracted: 19.788 grams
Final Volume: 1 mL

Lab Sample ID: AA77772
Matrix: Soil
Volume Extracted: N/A
Percent Solids: 76%
Extract Dilution: 1
pH: N/A
GPC Factor: N/A

CAS Number	Compound	Concentration ug/Kg	RL ug/Kg	Qualifier
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	170	
120-82-1	1,2,4-Trichlorobenzene	ND	170	
95-50-1	1,2-Dichlorobenzene	ND	170	
541-73-1	1,3-Dichlorobenzene	ND	170	
99-65-0	1,3-Dinitrobenzene	ND	170	
106-46-7	1,4-Dichlorobenzene	ND	170	
130-15-4	1,4-Naphthoquinone	ND	330	
90-12-0	1-Methylnaphthalene	ND	170	
108-60-1	2,2'-oxybis(1-chloropropane)	ND	170	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	170	
95-95-4	2,4,5-Trichlorophenol	ND	170	
88-06-2	2,4,6-Trichlorophenol	ND	170	
120-83-2	2,4-Dichlorophenol	ND	170	
51-28-5	2,4-Dinitrophenol	ND	330	
121-14-2	2,4-Dinitrotoluene	ND	170	
105-67-9	2,4-dimethylphenol	ND	170	
87-65-0	2,6-Dichlorophenol	ND	170	
606-20-2	2,6-Dinitrotoluene	ND	170	
91-58-7	2-Chloronaphthalene	ND	170	
95-57-8	2-Chlorophenol	ND	170	
91-57-6	2-Methylnaphthalene	ND	170	
95-48-7	2-Methylphenol	ND	170	
88-74-4	2-Nitroaniline	ND	170	
88-75-5	2-Nitrophenol	ND	170	
108-39-4/106-44-	3&4-Methylphenol	ND	330	
91-94-1	3,3'-Dichlorobenzidine	ND	170	
56-49-5	3-Methylcholanthrene	ND	170	
99-09-2	3-Nitroaniline	ND	170	
534-52-1	4,6-Dinitro-2-methylphenol	ND	330	
101-55-3	4-Bromophenyl-phenylether	ND	170	
59-50-7	4-Chloro-3-methylphenol	ND	170	
106-47-8	4-Chloroaniline	ND	170	
7005-72-3	4-Chlorophenyl-phenylether	ND	170	
100-01-6	4-Nitroaniline	ND	170	
100-02-7	4-Nitrophenol	ND	330	
56-57-5	4-nitroquinoline-1-oxide	ND	670	
83-32-9	Acenaphthene	120	170	L
208-96-8	Acenaphthylene	240	170	
98-86-2	Acetophenone	ND	170	
62-53-3	Aniline	ND	170	
120-12-7	Anthracene	440	170	

140-57-8	Aramite	ND	170	
103-33-3	Azobenzene	ND	170	
92-87-5	Benzidine	ND	170	
56-55-3	Benzo(a)anthracene	1500	170	
50-32-8	Benzo(a)pyrene	1600	170	
205-99-2	Benzo(b)fluoranthene	2000	170	
191-24-2	Benzo(g,h,i)perylene	1100	170	
207-08-9	Benzo(k)fluoranthene	1300	170	
65-85-0	Benzoic acid	ND	330	
100-51-6	Benzyl alcohol	ND	170	
111-44-4	Bis(2-Chloroethyl)ether	ND	170	
117-81-7	Bis(2-ethylhexyl)phthalate	570	170	
85-68-7	Butylbenzylphthalate	ND	170	
86-74-8	Carbazole	170	170	
510-15-6	Chlorobenzilate	ND	170	
218-01-9	Chrysene	2000	170	
84-74-2	Di-n-butylphthalate	5000	170	
117-84-0	Di-n-octyl phthalate	1000	170	
53-70-3	Dibenz(a,h)anthracene	280	170	
132-64-9	Dibenzofuran	ND	170	
84-66-2	Diethylphthalate	ND	170	
131-11-3	Dimethyl phthalate	ND	170	
88-85-7	Dinoseb	ND	170	
62-50-0	Ethyl methanesulfonate	ND	170	
206-44-0	Fluoranthene	2900	170	
86-73-7	Fluorene	120	170	L
118-74-1	Hexachlorobenzene	ND	170	
87-68-3	Hexachlorobutadiene	ND	170	
77-47-4	Hexachlorocyclopentadiene	ND	170	
67-72-1	Hexachloroethane	ND	170	
1888-71-7	Hexachloropropene	ND	170	
193-39-5	Indeno(1,2,3-cd)pyrene	1100	170	
465-73-6	Isodrin	ND	170	
78-59-1	Isophorone	ND	170	
120-58-1	Isosafrole	ND	170	
143-50-0	Kepone	ND	170	
66-27-3	Methyl methanesulfonate	ND	170	
86-30-6	N-Nitrosodiphenylamine	ND	170	
621-64-7	N-nitroso-di-n-propylamine	ND	170	
62-75-9	N-nitrosodimethylamine	ND	330	
91-20-3	Naphthalene	ND	170	
98-95-3	Nitrobenzene	ND	170	
608-93-5	Pentachlorobenzene	ND	170	
82-68-8	Pentachloronitrobenzene	ND	170	
87-86-5	Pentachlorophenol	440	670	
62-44-2	Phenacetin	ND	170	
85-01-8	Phenanthrene	1300	170	
108-95-2	Phenol	ND	170	
129-00-0	Pyrene	2800	170	
110-86-1	Pyridine	ND	330	
94-59-7	Safrole	ND	170	
111-91-1	bis(-2-Chloroethoxy)methane	ND	170	

Surrogate Compounds	Recoveries (%)	QC Ranges
2-Fluorophenol (SS1)	60	39 - 106
Phenol-d6 (SS2)	58	38 - 92
Nitrobenzene-d5 (SS3)	60	31 - 102
2,4,6-Tribromophenol (SS5)	63	35 - 102
p-Terphenyl-d14 (SS6)	70	41 - 106
2-Fluorobiphenyl (SS4)	65	39 - 103

Comments: L- below reporting limit

Tentatively Identified non-Target Compounds, ppb

Phenanthrene, 2-methyl-	300 J
Anthracene, 2-methyl-	400 J
9,10-Anthracenedione	200 J
Cyclopenta[def]phenanthrenone	300 J
trans-Chlordane	200 J
Fluoranthene, 2-methyl-	500 J
11H-Benzo[b]fluorene	900 J
Pyrene, 1-methyl-	300 J
Pyrene, 2-methyl-	200 J
11H-Benzo[a]fluorene-11-one	300 J

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

Laboratory Blank

Client Sample ID: N/A
Date of Collection: N/A
Date of Extraction: 12/12/07
Date of Analysis: 12/17/07
Dry Weight Extracted: 20.256 grams
Wet Weight Extracted: 20.256 grams
Final Volume: 1 mL

Lab Sample ID: N/A
Matrix: Soil
Volume Extracted: N/A
Percent Solids: 100%
Extract Dilution: 1
pH: N/A
GPC Factor: N/A

CAS Number	Compound	Concentration ug/Kg	RL ug/Kg	Qualifier
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	120	
120-82-1	1,2,4-Trichlorobenzene	ND	120	
95-50-1	1,2-Dichlorobenzene	ND	120	
541-73-1	1,3-Dichlorobenzene	ND	120	
99-65-0	1,3-Dinitrobenzene	ND	120	
106-46-7	1,4-Dichlorobenzene	ND	120	
130-15-4	1,4-Naphthoquinone	ND	200	
90-12-0	1-Methylnaphthalene	ND	120	
108-60-1	2,2'-oxybis(1-chloropropane)	ND	120	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	120	
95-95-4	2,4,5-Trichlorophenol	ND	120	
88-06-2	2,4,6-Trichlorophenol	ND	120	
120-83-2	2,4-Dichlorophenol	ND	120	
51-28-5	2,4-Dinitrophenol	ND	200	
121-14-2	2,4-Dinitrotoluene	ND	120	
105-67-9	2,4-dimethylphenol	ND	120	
87-65-0	2,6-Dichlorophenol	ND	120	
606-20-2	2,6-Dinitrotoluene	ND	120	
91-58-7	2-Chloronaphthalene	ND	120	
95-57-8	2-Chlorophenol	ND	120	
91-57-6	2-Methylnaphthalene	ND	120	
95-48-7	2-Methylphenol	ND	120	
88-74-4	2-Nitroaniline	ND	120	
88-75-5	2-Nitrophenol	ND	120	
108-39-4/106-44-	3&4-Methylphenol	ND	250	
91-94-1	3,3'-Dichlorobenzidine	ND	120	
56-49-5	3-Methylcholanthrene	ND	120	
99-09-2	3-Nitroaniline	ND	120	
534-52-1	4,6-Dinitro-2-methylphenol	ND	200	
101-55-3	4-Bromophenyl-phenylether	ND	120	
59-50-7	4-Chloro-3-methylphenol	ND	120	
106-47-8	4-Chloroaniline	ND	120	
7005-72-3	4-Chlorophenyl-phenylether	ND	120	
100-01-6	4-Nitroaniline	ND	120	
100-02-7	4-Nitrophenol	ND	200	
56-57-5	4-nitroquinoline-1-oxide	ND	490	
83-32-9	Acenaphthene	ND	120	
208-96-8	Acenaphthylene	ND	120	
98-86-2	Acetophenone	ND	120	
62-53-3	Aniline	ND	120	
120-12-7	Anthracene	ND	120	

140-57-8	Aramite	ND	120
103-33-3	Azobenzene	ND	120
92-87-5	Benzidine	ND	120
56-55-3	Benzo(a)anthracene	ND	120
50-32-8	Benzo(a)pyrene	ND	120
205-99-2	Benzo(b)fluoranthene	ND	120
191-24-2	Benzo(g,h,i)perylene	ND	120
207-08-9	Benzo(k)fluoranthene	ND	120
65-85-0	Benzoic acid	ND	200
100-51-6	Benzyl alcohol	ND	120
111-44-4	Bis(2-Chloroethyl)ether	ND	120
117-81-7	Bis(2-ethylhexyl)phthalate	ND	120
85-68-7	Butylbenzylphthalate	ND	120
86-74-8	Carbazole	ND	120
510-15-6	Chlorobenzilate	ND	120
218-01-9	Chrysene	ND	120
84-74-2	Di-n-butylphthalate	ND	120
117-84-0	Di-n-octyl phthalate	ND	120
53-70-3	Dibenz(a,h)anthracene	ND	120
132-64-9	Dibenzofuran	ND	120
84-66-2	Diethylphthalate	ND	120
131-11-3	Dimethyl phthalate	ND	120
88-85-7	Dinoseb	ND	120
62-50-0	Ethyl methanesulfonate	ND	120
206-44-0	Fluoranthene	ND	120
86-73-7	Fluorene	ND	120
118-74-1	Hexachlorobenzene	ND	120
87-68-3	Hexachlorobutadiene	ND	120
77-47-4	Hexachlorocyclopentadiene	ND	120
67-72-1	Hexachloroethane	ND	120
1888-71-7	Hexachloropropene	ND	120
193-39-5	Indeno(1,2,3-cd)pyrene	ND	120
465-73-6	Isodrin	ND	120
78-59-1	Isophorone	ND	120
120-58-1	Isosafrole	ND	120
143-50-0	Kepone	ND	120
66-27-3	Methyl methanesulfonate	ND	120
86-30-6	N-Nitrosodiphenylamine	ND	120
621-64-7	N-nitroso-di-n-propylamine	ND	120
62-75-9	N-nitrosodimethylamine	ND	200
91-20-3	Naphthalene	ND	120
98-95-3	Nitrobenzene	ND	120
608-93-5	Pentachlorobenzene	ND	120
82-68-8	Pentachloronitrobenzene	ND	120
87-86-5	Pentachlorophenol	ND	490
62-44-2	Phenacetin	ND	120
85-01-8	Phenanthrene	ND	120
108-95-2	Phenol	ND	120
129-00-0	Pyrene	ND	120
110-86-1	Pyridine	ND	200
94-59-7	Safrole	ND	120
111-91-1	bis(-2-Chloroethoxy)methane	ND	120

Surrogate Compounds	Recoveries (%)	QC Ranges
2-Fluorophenol (SS1)	57	39 - 106
Phenol-d6 (SS2)	56	38 - 92
Nitrobenzene-d5 (SS3)	58	31 - 102
2,4,6-Tribromophenol (SS5)	40	35 - 102
p-Terphenyl-d14 (SS6)	64	41 - 106

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard
BNAs in Soils Medium Level

Client Sample ID: S-3 0-12in
Date of Collection: 12/12/2007
Date of Extraction: 12/12/07
Date of Analysis: 12/17/07
Dry Weight Extracted: 15.135 grams
Wet Weight Extracted: 19.333 grams
Final Volume: 1 mL

Lab Sample ID: AA77773
Matrix: Soil
Volume Extracted: N/A
Percent Solids: 78%
Extract Dilution: 1
pH: N/A
GPC Factor: N/A

CAS Number	Compound	Concentration ug/Kg	RL ug/Kg	Qualifier
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	170	
120-82-1	1,2,4-Trichlorobenzene	ND	170	
95-50-1	1,2-Dichlorobenzene	ND	170	
541-73-1	1,3-Dichlorobenzene	ND	170	
99-65-0	1,3-Dinitrobenzene	ND	170	
106-46-7	1,4-Dichlorobenzene	ND	170	
130-15-4	1,4-Naphthoquinone	ND	330	
90-12-0	1-Methylnaphthalene	ND	170	
108-60-1	2,2'-oxybis(1-chloropropane)	ND	170	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	170	
95-95-4	2,4,5-Trichlorophenol	ND	170	
88-06-2	2,4,6-Trichlorophenol	ND	170	
120-83-2	2,4-Dichlorophenol	ND	170	
51-28-5	2,4-Dinitrophenol	ND	330	
121-14-2	2,4-Dinitrotoluene	ND	170	
105-67-9	2,4-dimethylphenol	ND	170	
87-65-0	2,6-Dichlorophenol	ND	170	
606-20-2	2,6-Dinitrotoluene	ND	170	
91-58-7	2-Chloronaphthalene	ND	170	
95-57-8	2-Chlorophenol	ND	170	
91-57-6	2-Methylnaphthalene	ND	170	
95-48-7	2-Methylphenol	ND	170	
88-74-4	2-Nitroaniline	ND	170	
88-75-5	2-Nitrophenol	ND	170	
108-39-4/106-44-	3&4-Methylphenol	ND	330	
91-94-1	3,3'-Dichlorobenzidine	ND	170	
56-49-5	3-Methylcholanthrene	ND	170	
99-09-2	3-Nitroaniline	ND	170	
534-52-1	4,6-Dinitro-2-methylphenol	ND	330	
101-55-3	4-Bromophenyl-phenylether	ND	170	
59-50-7	4-Chloro-3-methylphenol	ND	170	
106-47-8	4-Chloroaniline	ND	170	
7005-72-3	4-Chlorophenyl-phenylether	ND	170	
100-01-6	4-Nitroaniline	ND	170	
100-02-7	4-Nitrophenol	ND	330	
56-57-5	4-nitroquinoline-1-oxide	ND	660	
83-32-9	Acenaphthene	210	170	
208-96-8	Acenaphthylene	ND	170	
98-86-2	Acetophenone	ND	170	
62-53-3	Aniline	ND	170	
120-12-7	Anthracene	520	170	

140-57-8	Aramite	ND	170
103-33-3	Azobenzene	ND	170
92-87-5	Benzidine	ND	170
56-55-3	Benzo(a)anthracene	1500	170
50-32-8	Benzo(a)pyrene	1500	170
205-99-2	Benzo(b)fluoranthene	1400	170
191-24-2	Benzo(g,h,i)perylene	1000	170
207-08-9	Benzo(k)fluoranthene	1100	170
65-85-0	Benzoic acid	ND	330
100-51-6	Benzyl alcohol	ND	170
111-44-4	Bis(2-Chloroethyl)ether	ND	170
117-81-7	Bis(2-ethylhexyl)phthalate	250	170
85-68-7	Butylbenzylphthalate	ND	170
86-74-8	Carbazole	270	170
510-15-6	Chlorobenzilate	ND	170
218-01-9	Chrysene	1600	170
84-74-2	Di-n-butylphthalate	ND	170
117-84-0	Di-n-octyl phthalate	ND	170
53-70-3	Dibenz(a,h)anthracene	250	170
132-64-9	Dibenzofuran	ND	170
84-66-2	Diethylphthalate	ND	170
131-11-3	Dimethyl phthalate	ND	170
88-85-7	Dinoseb	ND	170
62-50-0	Ethyl methanesulfonate	ND	170
206-44-0	Fluoranthene	3500	170
86-73-7	Fluorene	220	170
118-74-1	Hexachlorobenzene	ND	170
87-68-3	Hexachlorobutadiene	ND	170
77-47-4	Hexachlorocyclopentadiene	ND	170
67-72-1	Hexachloroethane	ND	170
1888-71-7	Hexachloropropene	ND	170
193-39-5	Indeno(1,2,3-cd)pyrene	1000	170
465-73-6	Isodrin	ND	170
78-59-1	Isophorone	ND	170
120-58-1	Isosafrole	ND	170
143-50-0	Kepone	ND	170
66-27-3	Methyl methanesulfonate	ND	170
86-30-6	N-Nitrosodiphenylamine	ND	170
621-64-7	N-nitroso-di-n-propylamine	ND	170
62-75-9	N-nitrosodimethylamine	ND	330
91-20-3	Naphthalene	ND	170
98-95-3	Nitrobenzene	ND	170
608-93-5	Pentachlorobenzene	ND	170
82-68-8	Pentachloronitrobenzene	ND	170
87-86-5	Pentachlorophenol	ND	660
62-44-2	Phenacetin	ND	170
85-01-8	Phenanthrene	2300	170
108-95-2	Phenol	ND	170
129-00-0	Pyrene	3000	170
110-86-1	Pyridine	ND	330
94-59-7	Safrole	ND	170
111-91-1	bis(-2-Chloroethoxy)methane	ND	170

Surrogate Compounds	Recoveries (%)	QC Ranges
2-Fluorophenol (SS1)	48	39 - 106
Phenol-d6 (SS2)	50	38 - 92
Nitrobenzene-d5 (SS3)	47	31 - 102
2,4,6-Tribromophenol (SS5)	58	35 - 102
p-Terphenyl-d14 (SS6)	70	41 - 106
2-Fluorobiphenyl (SS4)	50	39 - 103

Comments: Tentatively Identified non-Target Compounds, ppb

Phenanthrene, 2-methyl-	300 J
Anthracene, 9-methyl-	250 J
9,10-Anthracenedione	200 J
11H-Benzo[b]fluorene	300 J
Fluoranthene, 2-methyl-	700 J
11H-Benzo[a]fluorene	200 J
Pyrene, 1-methyl-	300 J
11H-Benzo[a]fluoren-11-one	300 J
Benzo[b]naphtho[2,3-d]thiophene	300 J
Cyclohexadecane	600 J

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard
BNAs in Soils Medium Level

Client Sample ID: S-4 0-8in
Date of Collection: 12/12/2007
Date of Extraction: 12/12/07
Date of Analysis: 12/17/07
Dry Weight Extracted: 15.672 grams
Wet Weight Extracted: 20.008 grams
Final Volume: 1 mL

Lab Sample ID: AA77774
Matrix: Soil
Volume Extracted: N/A
Percent Solids: 78%
Extract Dilution: 1
pH: N/A
GPC Factor: N/A

CAS Number	Compound	Concentration ug/Kg	RL ug/Kg	Qualifier
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	160	
120-82-1	1,2,4-Trichlorobenzene	ND	160	
95-50-1	1,2-Dichlorobenzene	ND	160	
541-73-1	1,3-Dichlorobenzene	ND	160	
99-65-0	1,3-Dinitrobenzene	ND	160	
106-46-7	1,4-Dichlorobenzene	ND	160	
130-15-4	1,4-Naphthoquinone	ND	320	
90-12-0	1-Methylnaphthalene	ND	160	
108-60-1	2,2'-oxybis(1-chloropropane)	ND	160	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	160	
95-95-4	2,4,5-Trichlorophenol	ND	160	
88-06-2	2,4,6-Trichlorophenol	ND	160	
120-83-2	2,4-Dichlorophenol	ND	160	
51-28-5	2,4-Dinitrophenol	ND	320	
121-14-2	2,4-Dinitrotoluene	ND	160	
105-67-9	2,4-dimethylphenol	ND	160	
87-65-0	2,6-Dichlorophenol	ND	160	
606-20-2	2,6-Dinitrotoluene	ND	160	
91-58-7	2-Chloronaphthalene	ND	160	
95-57-8	2-Chlorophenol	ND	160	
91-57-6	2-Methylnaphthalene	ND	160	
95-48-7	2-Methylphenol	ND	160	
88-74-4	2-Nitroaniline	ND	160	
88-75-5	2-Nitrophenol	ND	160	
108-39-4/106-44-	3&4-Methylphenol	ND	320	
91-94-1	3,3'-Dichlorobenzidine	ND	160	
56-49-5	3-Methylcholanthrene	ND	160	
99-09-2	3-Nitroaniline	ND	160	
534-52-1	4,6-Dinitro-2-methylphenol	ND	320	
101-55-3	4-Bromophenyl-phenylether	ND	160	
59-50-7	4-Chloro-3-methylphenol	ND	160	
106-47-8	4-Chloroaniline	ND	160	
7005-72-3	4-Chlorophenyl-phenylether	ND	160	
100-01-6	4-Nitroaniline	ND	160	
100-02-7	4-Nitrophenol	ND	320	
56-57-5	4-nitroquinoline-1-oxide	ND	640	
83-32-9	Acenaphthene	ND	160	
208-96-8	Acenaphthylene	250	160	
98-86-2	Acetophenone	ND	160	
62-53-3	Aniline	ND	160	
120-12-7	Anthracene	240	160	

140-57-8	Aramite	ND	160
103-33-3	Azobenzene	ND	160
92-87-5	Benzidine	ND	160
56-55-3	Benzo(a)anthracene	820	160
50-32-8	Benzo(a)pyrene	1000	160
205-99-2	Benzo(b)fluoranthene	900	160
191-24-2	Benzo(g,h,i)perylene	690	160
207-08-9	Benzo(k)fluoranthene	800	160
65-85-0	Benzoic acid	ND	320
100-51-6	Benzyl alcohol	ND	160
111-44-4	Bis(2-Chloroethyl)ether	ND	160
117-81-7	Bis(2-ethylhexyl)phthalate	ND	160
85-68-7	Butylbenzylphthalate	ND	160
86-74-8	Carbazole	ND	160
510-15-6	Chlorobenzilate	ND	160
218-01-9	Chrysene	880	160
84-74-2	Di-n-butylphthalate	ND	160
117-84-0	Di-n-octyl phthalate	220	160
53-70-3	Dibenz(a,h)anthracene	160	160
132-64-9	Dibenzofuran	ND	160
84-66-2	Diethylphthalate	ND	160
131-11-3	Dimethyl phthalate	ND	160
88-85-7	Dinoseb	ND	160
62-50-0	Ethyl methanesulfonate	ND	160
206-44-0	Fluoranthene	1300	160
86-73-7	Fluorene	ND	160
118-74-1	Hexachlorobenzene	ND	160
87-68-3	Hexachlorobutadiene	ND	160
77-47-4	Hexachlorocyclopentadiene	ND	160
67-72-1	Hexachloroethane	ND	160
1888-71-7	Hexachloropropene	ND	160
193-39-5	Indeno(1,2,3-cd)pyrene	710	160
465-73-6	Isodrin	ND	160
78-59-1	Isophorone	ND	160
120-58-1	Isosafrole	ND	160
143-50-0	Kepone	ND	160
66-27-3	Methyl methanesulfonate	ND	160
86-30-6	N-Nitrosodiphenylamine	ND	160
621-64-7	N-nitroso-di-n-propylamine	ND	160
62-75-9	N-nitrosodimethylamine	ND	320
91-20-3	Naphthalene	ND	160
98-95-3	Nitrobenzene	ND	160
608-93-5	Pentachlorobenzene	ND	160
82-68-8	Pentachloronitrobenzene	ND	160
87-86-5	Pentachlorophenol	ND	640
62-44-2	Phenacetin	ND	160
85-01-8	Phenanthrene	650	160
108-95-2	Phenol	ND	160
129-00-0	Pyrene	1300	160
110-86-1	Pyridine	ND	320
94-59-7	Safrole	ND	160
111-91-1	bis(-2-Chloroethoxy)methane	ND	160

Surrogate Compounds	Recoveries (%)	QC Ranges
2-Fluorophenol (SS1)	53	39 - 106
Phenol-d6 (SS2)	53	38 - 92
Nitrobenzene-d5 (SS3)	50	31 - 102
2,4,6-Tribromophenol (SS5)	58	35 - 102
p-Terphenyl-d14 (SS6)	65	41 - 106
2-Fluorobiphenyl (SS4)	55	39 - 103

Comments: Tentatively Identified non-Target Compounds, ppb

Benzeneacetic acid	300 J
5H-Indeno[1,2-b]pyridine	200 J
4H-Cyclopenta[def]phenanthrene	200 J
Fluoranthene, 2-methyl-	1000 J
11H-Benzo[a]fluorene	300 J
2-Phenanthrenol, 4b,5,6,7,8,8a,9,10-octahydro-4b,8,8-trimethyl-	800 J
Tetracasanol	450 J
Benzo[b]naphtho-[2,1-d]thiophene	300 J
5-Eicosene	1300 J
Cyclotetracosane	2000 J

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard
BNAs in Soils Medium Level

Client Sample ID: S-5 0-12in
Date of Collection: 12/12/2007
Date of Extraction: 12/12/07
Date of Analysis: 12/17/07
Dry Weight Extracted: 16.771 grams
Wet Weight Extracted: 19.49 grams
Final Volume: 1 mL

Lab Sample ID: AA77775
Matrix: Soil
Volume Extracted: N/A
Percent Solids: 86%
Extract Dilution: 1
pH: N/A
GPC Factor: N/A

CAS Number	Compound	Concentration ug/Kg	RL ug/Kg	Qualifier
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	150	
120-82-1	1,2,4-Trichlorobenzene	ND	150	
95-50-1	1,2-Dichlorobenzene	ND	150	
541-73-1	1,3-Dichlorobenzene	ND	150	
99-65-0	1,3-Dinitrobenzene	ND	150	
106-46-7	1,4-Dichlorobenzene	ND	150	
130-15-4	1,4-Naphthoquinone	ND	300	
90-12-0	1-Methylnaphthalene	ND	150	
108-60-1	2,2'-oxybis(1-chloropropane)	ND	150	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	150	
95-95-4	2,4,5-Trichlorophenol	ND	150	
88-06-2	2,4,6-Trichlorophenol	ND	150	
120-83-2	2,4-Dichlorophenol	ND	150	
51-28-5	2,4-Dinitrophenol	ND	300	
121-14-2	2,4-Dinitrotoluene	ND	150	
105-67-9	2,4-dimethylphenol	ND	150	
87-65-0	2,6-Dichlorophenol	ND	150	
606-20-2	2,6-Dinitrotoluene	ND	150	
91-58-7	2-Chloronaphthalene	ND	150	
95-57-8	2-Chlorophenol	ND	150	
91-57-6	2-Methylnaphthalene	ND	150	
95-48-7	2-Methylphenol	ND	150	
88-74-4	2-Nitroaniline	ND	150	
88-75-5	2-Nitrophenol	ND	150	
108-39-4/106-44-	3&4-Methylphenol	ND	300	
91-94-1	3,3'-Dichlorobenzidine	ND	150	
56-49-5	3-Methylcholanthrene	ND	150	
99-09-2	3-Nitroaniline	ND	150	
534-52-1	4,6-Dinitro-2-methylphenol	ND	300	
101-55-3	4-Bromophenyl-phenylether	ND	150	
59-50-7	4-Chloro-3-methylphenol	ND	150	
106-47-8	4-Chloroaniline	ND	150	
7005-72-3	4-Chlorophenyl-phenylether	ND	150	
100-01-6	4-Nitroaniline	ND	150	
100-02-7	4-Nitrophenol	ND	300	
56-57-5	4-nitroquinoline-1-oxide	ND	600	
83-32-9	Acenaphthene	410	150	
208-96-8	Acenaphthylene	ND	150	
98-86-2	Acetophenone	ND	150	
62-53-3	Aniline	ND	150	
120-12-7	Anthracene	1200	150	

140-57-8	Aramite	ND	150
103-33-3	Azobenzene	ND	150
92-87-5	Benzidine	ND	150
56-55-3	Benzo(a)anthracene	2200	150
50-32-8	Benzo(a)pyrene	1900	150
205-99-2	Benzo(b)fluoranthene	1800	150
191-24-2	Benzo(g,h,i)perylene	1300	150
207-08-9	Benzo(k)fluoranthene	1400	150
65-85-0	Benzoic acid	ND	300
100-51-6	Benzyl alcohol	ND	150
111-44-4	Bis(2-Chloroethyl)ether	ND	150
117-81-7	Bis(2-ethylhexyl)phthalate	ND	150
85-68-7	Butylbenzylphthalate	ND	150
86-74-8	Carbazole	640	150
510-15-6	Chlorobenzilate	ND	150
218-01-9	Chrysene	2200	150
84-74-2	Di-n-butylphthalate	ND	150
117-84-0	Di-n-octyl phthalate	ND	150
53-70-3	Dibenz(a,h)anthracene	290	150
132-64-9	Dibenzofuran	340	150
84-66-2	Diethylphthalate	ND	150
131-11-3	Dimethyl phthalate	ND	150
88-85-7	Dinoseb	ND	150
62-50-0	Ethyl methanesulfonate	ND	150
206-44-0	Fluoranthene	5600	750
86-73-7	Fluorene	370	150
118-74-1	Hexachlorobenzene	ND	150
87-68-3	Hexachlorobutadiene	ND	150
77-47-4	Hexachlorocyclopentadiene	ND	150
67-72-1	Hexachloroethane	ND	150
1888-71-7	Hexachloropropene	ND	150
193-39-5	Indeno(1,2,3-cd)pyrene	1300	150
465-73-6	Isodrin	ND	150
78-59-1	Isophorone	ND	150
120-58-1	Isosafrole	ND	150
143-50-0	Kepone	ND	150
66-27-3	Methyl methanesulfonate	ND	150
86-30-6	N-Nitrosodiphenylamine	ND	150
621-64-7	N-nitroso-di-n-propylamine	ND	150
62-75-9	N-nitrosodimethylamine	ND	300
91-20-3	Naphthalene	150	150
98-95-3	Nitrobenzene	ND	150
608-93-5	Pentachlorobenzene	ND	150
82-68-8	Pentachloronitrobenzene	ND	150
87-86-5	Pentachlorophenol	ND	600
62-44-2	Phenacetin	ND	150
85-01-8	Phenanthrene	4500	150
108-95-2	Phenol	ND	150
129-00-0	Pyrene	4200	150
110-86-1	Pyridine	ND	300
94-59-7	Safrole	ND	150
111-91-1	bis(-2-Chloroethoxy)methane	ND	150

Surrogate Compounds	Recoveries (%)	QC Ranges
2-Fluorophenol (SS1)	55	39 - 106
Phenol-d6 (SS2)	53	38 - 92
Nitrobenzene-d5 (SS3)	55	31 - 102
2,4,6-Tribromophenol (SS5)	60	35 - 102
p-Terphenyl-d14 (SS6)	70	41 - 106
2-Fluorobiphenyl (SS4)	55	39 - 103

Comments: Sample was run without dilution and rerun with 5x dilution to report fluoranthene only.
Data from original run was used to report all target analytes.

Tentatively Identified non-Target Compounds, ppb

9H-Fluorene-9-one	400 J
Dibenzophiophene	300 J
Phenanthrene, 2-methyl-	400 J
Phenanthrene, 1-methyl-	600 J
Anthracene, 2-methyl-	300 J
Naphthalene, 2-phenyl-	300 J
9,10-Anthracenedione-	400 J
Phenanthrene, 2,5-dimethyl-	300 J
Cyclopenta[def]phenanthrenone	400 J
Fluoranthene, 2-methyl-	200 J

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard
BNAs in Soils Medium Level

Client Sample ID: S-6 0-12in
Date of Collection: 12/12/2007
Date of Extraction: 12/12/07
Date of Analysis: 12/17/07
Dry Weight Extracted: 16.954 grams
Wet Weight Extracted: 19.171 grams
Final Volume: 1 mL

Lab Sample ID: AA77776
Matrix: Soil
Volume Extracted: N/A
Percent Solids: 88%
Extract Dilution: 1
pH: N/A
GPC Factor: N/A

CAS Number	Compound	Concentration ug/Kg	RL ug/Kg	Qualifier
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	150	
120-82-1	1,2,4-Trichlorobenzene	ND	150	
95-50-1	1,2-Dichlorobenzene	ND	150	
541-73-1	1,3-Dichlorobenzene	ND	150	
99-65-0	1,3-Dinitrobenzene	ND	150	
106-46-7	1,4-Dichlorobenzene	ND	150	
130-15-4	1,4-Naphthoquinone	ND	300	
90-12-0	1-Methylnaphthalene	ND	150	
108-60-1	2,2'-oxybis(1-chloropropane)	ND	150	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	150	
95-95-4	2,4,5-Trichlorophenol	ND	150	
88-06-2	2,4,6-Trichlorophenol	ND	150	
120-83-2	2,4-Dichlorophenol	ND	150	
51-28-5	2,4-Dinitrophenol	ND	300	
121-14-2	2,4-Dinitrotoluene	ND	150	
105-67-9	2,4-dimethylphenol	ND	150	
87-65-0	2,6-Dichlorophenol	ND	150	
606-20-2	2,6-Dinitrotoluene	ND	150	
91-58-7	2-Chloronaphthalene	ND	150	
95-57-8	2-Chlorophenol	ND	150	
91-57-6	2-Methylnaphthalene	ND	150	
95-48-7	2-Methylphenol	ND	150	
88-74-4	2-Nitroaniline	ND	150	
88-75-5	2-Nitrophenol	ND	150	
108-39-4/106-44-	3&4-Methylphenol	ND	300	
91-94-1	3,3'-Dichlorobenzidine	ND	150	
56-49-5	3-Methylcholanthrene	ND	150	
99-09-2	3-Nitroaniline	ND	150	
534-52-1	4,6-Dinitro-2-methylphenol	ND	300	
101-55-3	4-Bromophenyl-phenylether	ND	150	
59-50-7	4-Chloro-3-methylphenol	ND	150	
106-47-8	4-Chloroaniline	ND	150	
7005-72-3	4-Chlorophenyl-phenylether	ND	150	
100-01-6	4-Nitroaniline	ND	150	
100-02-7	4-Nitrophenol	ND	300	
56-57-5	4-nitroquinoline-1-oxide	ND	590	
83-32-9	Acenaphthene	ND	150	
208-96-8	Acenaphthylene	ND	150	
98-86-2	Acetophenone	ND	150	
62-53-3	Aniline	ND	150	
120-12-7	Anthracene	190	150	

140-57-8	Aramite	ND	150
103-33-3	Azobenzene	ND	150
92-87-5	Benzidine	ND	150
56-55-3	Benzo(a)anthracene	620	150
50-32-8	Benzo(a)pyrene	710	150
205-99-2	Benzo(b)fluoranthene	680	150
191-24-2	Benzo(g,h,i)perylene	490	150
207-08-9	Benzo(k)fluoranthene	530	150
65-85-0	Benzoic acid	ND	300
100-51-6	Benzyl alcohol	ND	150
111-44-4	Bis(2-Chloroethyl)ether	ND	150
117-81-7	Bis(2-ethylhexyl)phthalate	ND	150
85-68-7	Butylbenzylphthalate	ND	150
86-74-8	Carbazole	ND	150
510-15-6	Chlorobenzilate	ND	150
218-01-9	Chrysene	720	150
84-74-2	Di-n-butylphthalate	ND	150
117-84-0	Di-n-octyl phthalate	ND	150
53-70-3	Dibenz(a,h)anthracene	ND	150
132-64-9	Dibenzofuran	ND	150
84-66-2	Diethylphthalate	ND	150
131-11-3	Dimethyl phthalate	ND	150
88-85-7	Dinoseb	ND	150
62-50-0	Ethyl methanesulfonate	ND	150
206-44-0	Fluoranthene	1300	150
86-73-7	Fluorene	ND	150
118-74-1	Hexachlorobenzene	ND	150
87-68-3	Hexachlorobutadiene	ND	150
77-47-4	Hexachlorocyclopentadiene	ND	150
67-72-1	Hexachloroethane	ND	150
1888-71-7	Hexachloropropene	ND	150
193-39-5	Indeno(1,2,3-cd)pyrene	470	150
465-73-6	Isodrin	ND	150
78-59-1	Isophorone	ND	150
120-58-1	Isosafrole	ND	150
143-50-0	Kepone	ND	150
66-27-3	Methyl methanesulfonate	ND	150
86-30-6	N-Nitrosodiphenylamine	ND	150
621-64-7	N-nitroso-di-n-propylamine	ND	150
62-75-9	N-nitrosodimethylamine	ND	300
91-20-3	Naphthalene	ND	150
98-95-3	Nitrobenzene	ND	150
608-93-5	Pentachlorobenzene	ND	150
82-68-8	Pentachloronitrobenzene	ND	150
87-86-5	Pentachlorophenol	ND	590
62-44-2	Phenacetin	ND	150
85-01-8	Phenanthrene	600	150
108-95-2	Phenol	ND	150
129-00-0	Pyrene	1200	150
110-86-1	Pyridine	ND	300
94-59-7	Safrole	ND	150
111-91-1	bis(-2-Chloroethoxy)methane	ND	150

Surrogate Compounds	Recoveries (%)	QC Ranges
2-Fluorophenol (SS1)	48	39 - 106
Phenol-d6 (SS2)	45	38 - 92
Nitrobenzene-d5 (SS3)	48	31 - 102
2,4,6-Tribromophenol (SS5)	50	35 - 102
p-Terphenyl-d14 (SS6)	60	41 - 106
2-Fluorobiphenyl (SS4)	50	39 - 103

Comments: Tentatively Identified non-Target Compounds, ppb

4H-Cyclopenta[def]phenanthrene	300 J
Pyrene, 1-methyl-	300 J
11H-Benzo[a]fluorene	700 J
11H-Benzo[b]fluorene	160 J
Pyrene, 1-methyl-	300 J
Benzo[b]naphtho-[2,3-d]thiophene	200 J
Cyclohexadecane	400 J
Tetracosanal	500 J
Perylene	550 J

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

LABORATORY FORTIFIED BLANK (LFB) AND DUPLICATE (LFB Dup) RECOVERY

Charlestown Navy Yard

COMPOUND	SPIKE ADDED ug/L	LFB CONCENTRATION ug/L	LFB RECOVERY %	QC LIMITS (% REC)
1,2,4,5-Tetrachlorobenzene	2008	1300	66	38 - 130
1,2,4-Trichlorobenzene	2008	1300	65	16 - 138
1,2-Dichlorobenzene	2008	1200	62	20 - 123
1,3-Dichlorobenzene	2008	1200	59	19 - 120
1,3-Dinitrobenzene	2008	910	46	17 - 171
1,4-Dichlorobenzene	2008	1200	60	26 - 114
1,4-Naphthoquinone	2008	1400	69	30 - 154
1-Methylnaphthalene	2008	1300	66	35 - 127
2,2'-oxybis(1-chloropropane)	2008	1200	62	10 - 154
2,3,4,6-Tetrachlorophenol	2008	1200	59	8.2 - 178
2,4,5-Trichlorophenol	2008	1300	66	34 - 146
2,4,6-Trichlorophenol	2008	1400	68	40 - 141
2,4-Dichlorophenol	2008	1300	66	28 - 149
2,4-Dinitrophenol	2008	380	19	10 - 129
2,4-Dinitrotoluene	2008	1600	78	22 - 160
2,4-dimethylphenol	2008	910	45	40 - 135
2,6-Dichlorophenol	2008	1300	66	26 - 150
2,6-Dinitrotoluene	2008	1500	73	26 - 153
2-Chloronaphthalene	2008	1300	67	45 - 120
2-Chlorophenol	2008	1400	69	31 - 143
2-Methylnaphthalene	2008	1300	66	35 - 126
2-Methylphenol	2008	1300	67	16 - 160
2-Nitroaniline	2008	1900	93	36 - 154
2-Nitrophenol	2008	1500	72	14 - 150
3&4-Methylphenol	4016	2800	71	29 - 147
3,3'-Dichlorobenzidine	2008	1300	65	16 - 155
3-Methylcholanthrene	2008	1500	73	10 - 195
3-Nitroaniline	2008	1400	69	14 - 154
4,6-Dinitro-2-methylphenol	2008	860	43	10 - 147
4-Bromophenyl-phenylether	2008	1300	66	21 - 151
4-Chloro-3-methylphenol	2008	1500	74	26 - 149
4-Chloroaniline	2008	1200	60	10 - 163
4-Chlorophenyl-phenylether	2008	1400	71	40 - 137
4-Nitroaniline	2008	1400	72	15 - 172
4-Nitrophenol	2008	1200	61	10 - 189
4-nitroquinoline-1-oxide	2008	1000	52	10 - 193
Acenaphthene	2008	1400	70	46 - 120
Acenaphthylene	2008	1400	70	59 - 111
Acetophenone	2008	1300	67	27 - 135
Aniline	2008	1100	54	18 - 134
Anthracene	2008	1400	71	71 - 103
Aramite	2008	1600	77	24 - 162
Azobenzene	2008	1500	77	71 - 100
Benzidine	2008	470	24	2.0 - 97

Benzo(a)anthracene	2008	1400	72	62 - 116
Benzo(a)pyrene	2008	1500	77	26 - 148
Benzo(b)fluoranthene	2008	1500	77	17 - 161
Benzo(g,h,i)perylene	2008	1500	75	29 - 137
Benzo(k)fluoranthene	2008	1400	72	38 - 132
Benzoic acid	2008	ND	ND	10 - 122
Benzyl alcohol	2008	1400	68	12 - 164
Bis(2-Chloroethyl)ether	2008	1300	63	22 - 134
Bis(2-ethylhexyl)phthalate	2008	1700	87	45 - 141
Butylbenzylphthalate	2008	1700	83	49 - 136
Carbazole	2008	1400	69	68 - 108
Chlorobenzilate	2008	1500	73	27 - 156
Chrysene	2008	1400	70	66 - 115
Di-n-butylphthalate	2008	1600	81	57 - 123
Di-n-octyl phthalate	2008	1700	83	21 - 151
Dibenz(a,h)anthracene	2008	1600	82	7.8 - 172
Dibenzofuran	2008	1400	68	61 - 110
Diethylphthalate	2008	1500	75	61 - 127
Dimethyl phthalate	2008	1400	72	51 - 129
Dinoseb	2008	1200	59	10 - 174
Ethyl methanesulfonate	2008	1300	66	16 - 149
Fluoranthene	2008	1400	71	64 - 111
Fluorene	2008	1400	71	57 - 122
Hexachlorobenzene	2008	1300	66	18 - 156
Hexachlorobutadiene	2008	1200	62	10 - 150
Hexachlorocyclopentadiene	2008	1100	55	10 - 119
Hexachloroethane	2008	1300	64	11 - 126
Hexachloropropene	2008	1300	64	10 - 149
Indeno(1,2,3-cd)pyrene	2008	1600	81	36 - 144
Isodrin	2008	1400	68	19 - 157
Isophorone	2008	1400	69	39 - 135
Isosafrole	2008	1300	67	23 - 139
Kepone	2008	1100	53	12 - 84
Methyl methanesulfonate	2008	1300	65	29 - 146
N-Nitrosodiphenylamine	2008	1400	69	64 - 116
N-nitroso-di-n-propylamine	2008	1400	70	31 - 134
N-nitrosodimethylamine	2008	1200	58	36 - 113
Naphthalene	2008	1300	67	44 - 118
Nitrobenzene	2008	1400	67	40 - 130
Pentachlorobenzene	2008	1400	68	22 - 151
Pentachloronitrobenzene	2008	1400	72	32 - 158
Pentachlorophenol	2008	670	33	10 - 157
Phenacetin	2008	1500	73	46 - 145
Phenanthrene	2008	1400	70	71 - 106
Phenol	2008	1400	72	26 - 152
Pyrene	2008	1400	71	60 - 125
Pyridine	2008	840	42	19 - 93
Safrole	2008	1300	66	48 - 125
bis(-2-Chloroethoxy)methane	2008	1300	66	32 - 131

COMPOUND	LFB Dup CONCENTRATION ug/Kg	LFB Dup RECOVERY %	RPD %	QC LIMITS RPD
1,2,4,5-Tetrachlorobenzene	1100	56	16	50
1,2,4-Trichlorobenzene	1100	55	17	50
1,2-Dichlorobenzene	1000	52	18	50
1,3-Dichlorobenzene	1000	51	15	50
1,3-Dinitrobenzene	740	37	22	50
1,4-Dichlorobenzene	1000	51	16	50
1,4-Naphthoquinone	1200	58	17	50
1-Methylnaphthalene	1100	56	16	50
2,2'-oxybis(1-chloropropane)	1200	60	3	50
2,3,4,6-Tetrachlorophenol	870	44	29	50
2,4,5-Trichlorophenol	1100	54	20	50
2,4,6-Trichlorophenol	1100	55	21	50
2,4-Dichlorophenol	1100	55	18	50
2,4-Dinitrophenol	ND	0	0	50
2,4-Dinitrotoluene	1300	64	20	47
2,4-dimethylphenol	800	40	12	50
2,6-Dichlorophenol	1100	55	18	50
2,6-Dinitrotoluene	1200	61	18	50
2-Chloronaphthalene	1100	57	16	50
2-Chlorophenol	1200	58	17	50
2-Methylnaphthalene	1100	56	16	50
2-Methylphenol	1100	56	18	50
2-Nitroaniline	1500	77	19	50
2-Nitrophenol	1200	59	20	50
3&4-Methylphenol	2400	60	17	50
3,3'-Dichlorobenzidine	970	49	28	50
3-Methylcholanthrene	1200	61	18	50
3-Nitroaniline	1100	56	21	50
4,6-Dinitro-2-methylphenol	340	17	87	50
4-Bromophenyl-phenylether	1100	56	16	50
4-Chloro-3-methylphenol	1200	61	19	33
4-Chloroaniline	930	46	26	50
4-Chlorophenyl-phenylether	1200	61	15	50
4-Nitroaniline	1200	59	20	50
4-Nitrophenol	960	48	24	50
4-nitroquinoline-1-oxide	850	43	19	50
Acenaphthene	1200	59	17	19
Acenaphthylene	1200	59	17	50
Acetophenone	1100	57	16	50
Aniline	840	42	25	50
Anthracene	1200	60	17	50
Aramite	1300	63	20	50
Azobenzene	1300	65	17	50
Benzidine	400	20	18	50
Benzo(a)anthracene	1200	59	20	50
Benzo(a)pyrene	1300	63	20	50
Benzo(b)fluoranthene	1200	61	23	50
Benzo(g,h,i)perylene	1200	61	21	50
Benzo(k)fluoranthene	1200	62	15	50
Benzoic acid	ND	0	0	50
Benzyl alcohol	1100	57	18	50
Bis(2-Chloroethyl)ether	1100	54	15	50

Bis(2-ethylhexyl)phthalate	1400	72	19	50
Butylbenzylphthalate	1400	68	20	50
Carbazole	1200	58	17	50
Chlorobenzilate	1200	61	18	50
Chrysene	1200	58	19	50
Di-n-butylphthalate	1400	68	17	50
Di-n-octyl phthalate	1400	69	18	50
Dibenz(a,h)anthracene	1300	67	20	50
Dibenzofuran	1200	58	16	50
Diethylphthalate	1300	63	17	50
Dimethyl phthalate	1200	61	17	50
Dinoseb	760	38	43	50
Ethyl methanesulfonate	1100	56	16	50
Fluoranthene	1200	60	17	50
Fluorene	1200	61	15	50
Hexachlorobenzene	1100	55	18	50
Hexachlorobutadiene	1100	53	16	50
Hexachlorocyclopentadiene	960	48	14	50
Hexachloroethane	1100	55	15	50
Hexachloropropene	1100	54	17	50
Indeno(1,2,3-cd)pyrene	1300	66	20	50
Isodrin	1100	57	18	50
Isophorone	1200	59	16	50
Isosafrole	1100	56	18	50
Kepone	800	40	28	50
Methyl methanesulfonate	1100	55	17	50
N-Nitrosodiphenylamine	1200	58	17	50
N-nitroso-di-n-propylamine	1200	60	15	38
N-nitrosodimethylamine	970	48	19	50
Naphthalene	1100	56	18	50
Nitrobenzene	1100	56	18	50
Pentachlorobenzene	1100	57	18	50
Pentachloronitrobenzene	1200	59	20	50
Pentachlorophenol	340	17	64	47
Phenacetin	1200	60	20	50
Phenanthrene	1200	58	19	50
Phenol	1200	60	18	35
Pyrene	1200	59	19	36
Pyridine	730	37	13	50
Safrole	1100	57	15	50
bis(-2-Chloroethoxy)methan	1100	56	16	50

Samples in Batch: AA77771, AA77772, AA77773, AA77774, AA77775, AA77776

Comments: Benzoic acid was not detected in LFB and LFB duplicate, pentachlorophenol and 4,6-dinitro 2-methylphenol recovery in LFB abd LFB duplicate below QC limit. 2,4-dinitrophenol was not detected in LFB duplicate.

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Laboratory Duplicate Results

Charlestown Navy Yard

Sample ID: AA77772

PARAMETER	SAMPLE RESULT ug/Kg	SAMPLE DUPLICATE RESULT ug/Kg	PRECISION RPD %	QC LIMITS
1,2,4,5-Tetrachlorobenzene	ND	ND	ND	50
1,2,4-Trichlorobenzene	ND	ND	ND	50
1,2-Dichlorobenzene	ND	ND	ND	50
1,3-Dichlorobenzene	ND	ND	ND	50
1,3-Dinitrobenzene	ND	ND	ND	50
1,4-Dichlorobenzene	ND	ND	ND	50
1,4-Naphthoquinone	ND	ND	ND	50
1-Methylnaphthalene	ND	ND	ND	50
2,2'-oxybis(1-chloropropane)	ND	ND	ND	50
2,3,4,6-Tetrachlorophenol	ND	ND	ND	50
2,4,5-Trichlorophenol	ND	ND	ND	50
2,4,6-Trichlorophenol	ND	ND	ND	50
2,4-Dichlorophenol	ND	ND	ND	50
2,4-Dinitrophenol	ND	ND	ND	50
2,4-Dinitrotoluene	ND	ND	ND	50
2,4-dimethylphenol	ND	ND	ND	50
2,6-Dichlorophenol	ND	ND	ND	50
2,6-Dinitrotoluene	ND	ND	ND	50
2-Chloronaphthalene	ND	ND	ND	50
2-Chlorophenol	ND	ND	ND	50
2-Methylnaphthalene	ND	ND	ND	50
2-Methylphenol	ND	ND	ND	50
2-Nitroaniline	ND	ND	ND	50
2-Nitrophenol	ND	ND	ND	50
3&4-Methylphenol	ND	ND	ND	50
3,3'-Dichlorobenzidine	ND	ND	ND	50
3-Methylcholanthrene	ND	ND	ND	50
3-Nitroaniline	ND	ND	ND	50
4,6-Dinitro-2-methylphenol	ND	ND	ND	50
4-Bromophenyl-phenylether	ND	ND	ND	50
4-Chloro-3-methylphenol	ND	ND	ND	50
4-Chloroaniline	ND	ND	ND	50
4-Chlorophenyl-phenylether	ND	ND	ND	50
4-Nitroaniline	ND	ND	ND	50
4-Nitrophenol	ND	ND	ND	50
4-nitroquinoline-1-oxide	ND	ND	ND	50
Acenaphthene	120	188	44	50
Acenaphthylene	240	356	39	50
Acetophenone	ND	ND	ND	50
Aniline	ND	ND	ND	50
Anthracene	440	1028	80	50
Aramite	ND	ND	ND	50
Azobenzene	ND	ND	ND	50
Benzidine	ND	ND	ND	50
Benzo(a)anthracene	1500	2862	62	50
Benzo(a)pyrene	1600	2295	36	50
Benzo(b)fluoranthene	2000	2608	26	50
Benzo(g,h,i)perylene	1100	1485	30	50
Benzo(k)fluoranthene	1300	2409	60	50
Benzoic acid	ND	ND	ND	50

Benzyl alcohol	ND	ND	ND	50
Bis(2-Chloroethyl)ether	ND	ND	ND	50
Bis(2-ethylhexyl)phthalate	570	ND	ND	50
Butylbenzylphthalate	ND	ND	ND	50
Carbazole	170	254	40	50
Chlorobenzilate	ND	ND	ND	50
Chrysene	2000	3134	44	50
Di-n-butylphthalate	5000	ND	ND	50
Di-n-octyl phthalate	1000	ND	ND	50
Dibenz(a,h)anthracene	280	361	25	50
Dibenzofuran	ND	ND	ND	50
Diethylphthalate	ND	ND	ND	50
Dimethyl phthalate	ND	ND	ND	50
Dinoseb	ND	ND	ND	50
Ethyl methanesulfonate	ND	ND	ND	52
Fluoranthene	2900	6075	71	50
Fluorene	122	207	52	50
Hexachlorobenzene	ND	ND	ND	50
Hexachlorobutadiene	ND	ND	ND	50
Hexachlorocyclopentadiene	ND	ND	ND	50
Hexachloroethane	ND	ND	ND	50
Hexachloropropene	ND	ND	ND	50
Indeno(1,2,3-cd)pyrene	1100	1489	30	50
Isodrin	ND	ND	ND	50
Isophorone	ND	ND	ND	50
Isosafrole	ND	ND	ND	50
Kepone	ND	ND	ND	50
Methyl methanesulfonate	ND	ND	ND	50
N-Nitrosodiphenylamine	ND	ND	ND	50
N-nitroso-di-n-propylamine	ND	ND	ND	50
N-nitrosodimethylamine	ND	ND	ND	50
Naphthalene	ND	ND	ND	50
Nitrobenzene	ND	ND	ND	50
Pentachlorobenzene	ND	ND	ND	50
Pentachloronitrobenzene	ND	ND	ND	50
Pentachlorophenol	440	ND	ND	50
Phenacetin	ND	ND	ND	50
Phenanthrene	1300	1843	35	50
Phenol	ND	ND	ND	50
Pyrene	2800	5580	66	50
Pyridine	ND	ND	ND	50
Safrole	ND	ND	ND	50
bis(-2-Chloroethoxy)methane	ND	ND	ND	50

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

MATRIX SPIKE (MS) / MATRIX SPIKE DUPLICATE (MSD) RECOVERY

Charlestown Navy Yard

Sample ID: AA77772

PARAMETER	SPIKE ADDED ug/Kg	SAMPLE CONCENTRATION ug/Kg	MS CONCENTRATION ug/Kg	MS % REC	QC LIMITS (% REC)
1,2,4,5-Tetrachlorobenzene	2500	ND	1500	63	34 - 101
1,2,4-Trichlorobenzene	2500	ND	1500	61	26 - 105
1,2-Dichlorobenzene	2500	ND	1400	56	24 - 99
1,3-Dichlorobenzene	2500	ND	1300	54	17 - 104
1,3-Dinitrobenzene	2500	ND	1200	47	24 - 120
1,4-Dichlorobenzene	2500	ND	1400	55	17 - 101
1,4-Naphthoquinone	2500	ND	1000	40	21 - 101
1-Methylnaphthalene	2500	ND	1600	64	38 - 107
2,2'-oxybis(1-chloropropane)	2500	ND	1500	61	10 - 146
2,3,4,6-Tetrachlorophenol	2500	ND	1700	71	10 - 137
2,4,5-Trichlorophenol	2500	ND	1800	73	26 - 120
2,4,6-Trichlorophenol	2500	ND	1800	72	36 - 108
2,4-Dichlorophenol	2500	ND	1600	65	36 - 110
2,4-Dinitrophenol	2500	ND	680	28	10 - 104
2,4-Dinitrotoluene	2500	ND	2000	80	24 - 121
2,4-dimethylphenol	2500	ND	1400	57	47 - 106
2,6-Dichlorophenol	2500	ND	1600	63	36 - 108
2,6-Dinitrotoluene	2500	ND	1800	73	37 - 108
2-Chloronaphthalene	2500	ND	1600	64	39 - 102
2-Chlorophenol	2500	ND	1600	65	19 - 136
2-Methylnaphthalene	2500	ND	1600	65	37 - 112
2-Methylphenol	2500	ND	1600	64	25 - 130
2-Nitroaniline	2500	ND	2400	96	29 - 126
2-Nitrophenol	2500	ND	1700	70	33 - 102
3&4-Methylphenol	4900	ND	3400	69	30 - 125
3,3'-Dichlorobenzidine	2500	ND	200	8	11 - 124
3-Methylcholanthrene	2500	ND	1700	70	10 - 188
3-Nitroaniline	2500	ND	1400	58	26 - 107
4,6-Dinitro-2-methylphenol	2500	ND	1100	44	10 - 112
4-Bromophenyl-phenylether	2500	ND	1500	61	27 - 123
4-Chloro-3-methylphenol	2500	ND	1800	75	6.9 - 138
4-Chloroaniline	2500	ND	970	39	10 - 115
4-Chlorophenyl-phenylether	2500	ND	1800	71	34 - 118
4-Nitroaniline	2500	ND	1100	46	10 - 162
4-Nitrophenol	2500	ND	1900	78	10 - 163
4-nitroquinoline-1-oxide	2500	ND	680	27	10 - 90
Acenaphthene	2500	120	1900	70	26 - 128
Acenaphthylene	2500	240	1900	67	43 - 106
Acetophenone	2500	ND	1500	62	29 - 113
Aniline	2500	ND	660	27	10 - 117
Anthracene	2500	440	2300	76	44 - 113
Aramite	2500	ND	2100	85	33 - 135
Azobenzene	2500	ND	1700	71	31 - 119
Benzidine	2500	ND	71	3	10 - 83

Benzo(a)anthracene	2500	1500	3500	82	38 - 127
Benzo(a)pyrene	2500	1600	3500	75	19 - 142
Benzo(b)fluoranthene	2500	2000	3700	70	14 - 145
Benzo(g,h,i)perylene	2500	1100	3000	75	10 - 172
Benzo(k)fluoranthene	2500	1300	3200	77	23 - 135
Benzoic acid	2500	ND	690	28	10 - 193
Benzyl alcohol	2500	ND	1600	63	14 - 114
Bis(2-Chloroethyl)ether	2500	ND	1500	59	26 - 115
Bis(2-ethylhexyl)phthalate	2500	570	2400	74	40 - 160
Butylbenzylphthalate	2500	ND	2100	86	5 - 180
Carbazole	2500	170	1900	70	42 - 117
Chlorobenzilate	2500	ND	1900	75	27 - 139
Chrysene	2500	2000	3700	71	25 - 146
Di-n-butylphthalate	2500	5000	2100	-119	34 - 126
Di-n-octyl phthalate	2500	1000	2100	43	40 - 160
Dibenz(a,h)anthracene	2500	280	2200	79	10 - 172
Dibenzofuran	2500	ND	1800	71	39 - 111
Diethylphthalate	2500	ND	1900	78	38 - 122
Dimethyl phthalate	2500	ND	1800	73	46 - 102
Dinoseb	2500	ND	1400	57	10 - 123
Ethyl methanesulfonate	2500	ND	1500	60	32 - 100
Fluoranthene	2500	2900	5500	107	26 - 123
Fluorene	2500	120	1900	73	30 - 130
Hexachlorobenzene	2500	ND	1500	61	22 - 132
Hexachlorobutadiene	2500	ND	1500	60	18 - 108
Hexachlorocyclopentadiene	2500	ND	470	19	10 - 85
Hexachloroethane	2500	ND	1400	57	8.2 - 114
Hexachloropropene	2500	ND	1000	42	19 - 85
Indeno(1,2,3-cd)pyrene	2500	1100	3100	79	11 - 169
Isodrin	2500	ND	1700	69	22 - 117
Isophorone	2500	ND	1600	67	45 - 96
Isosafrole	2500	ND	1500	62	39 - 103
Kepone	2500	ND	850	34	10 - 100
Methyl methanesulfonate	2500	ND	1400	56	12 - 127
N-Nitrosodiphenylamine	2500	ND	1600	66	47 - 110
N-nitroso-di-n-propylamine	2500	ND	1600	64	25 - 126
N-nitrosodimethylamine	2500	ND	1300	53	8.6 - 110
Naphthalene	2500	ND	1600	65	35 - 110
Nitrobenzene	2500	ND	1500	63	42 - 98
Pentachlorobenzene	2500	ND	1700	68	26 - 120
Pentachloronitrobenzene	2500	ND	1800	71	20 - 136
Pentachlorophenol	2500	440	1500	41	10 - 151
Phenacetin	2500	ND	1900	76	30 - 127
Phenanthrene	2500	1300	3400	86	49 - 109
Phenol	2500	ND	1600	66	29 - 122
Pyrene	2500	2800	5200	97	40 - 160
Pyridine	2500	ND	960	39	10 - 83
Safrole	2500	ND	1600	65	36 - 101
bis(-2-Chloroethoxy)methane	2500	ND	1500	62	38 - 106

Comments: RPD for sample and sample duplicate for seven target analytes outside QC limits due to inability to achieve sample homogeneity
3,3-dichlorobenzidine and benzidine recovery in MS and MSD duplicate below QC limits.
Di-n-butylphthalate recovery in all QC samples outside acceptable limits.

Bis(2-ethylhexyl)phthalat	2600	2600	80	8	50
Butylbenzylphthalate	2600	2200	91	6	50
Carbazole	2600	2000	76	8	50
Chlorobenzilate	2600	2000	80	6	50
Chrysene	2600	4500	102	36	50
Di-n-butylphthalate	2600	2200	-115	3	50
Di-n-octyl phthalate	2600	2200	48	11	50
Dibenz(a,h)anthracene	2600	2600	92	15	50
Dibenzofuran	2600	1800	75	5	50
Diethylphthalate	2600	2000	80	3	50
Dimethyl phthalate	2600	1900	75	3	50
Dinoseb	2600	1400	59	3	50
Ethyl methanesulfonate	2600	1500	59	2	50
Fluoranthene	2600	6500	145	30	50
Fluorene	2600	2100	80	9	50
Hexachlorobenzene	2600	1600	64	5	50
Hexachlorobutadiene	2600	1500	61	2	50
Hexachlorocyclopentadie	2600	340	14	30	50
Hexachloroethane	2600	1400	57	0	50
Hexachloropropene	2600	910	37	13	50
Indeno(1,2,3-cd)pyrene	2600	3500	98	21	50
Isodrin	2600	1800	74	7	50
Isophorone	2600	1700	68	1	50
Isosafrole	2600	1600	63	2	50
Kepone	2600	810	33	3	50
Methyl methanesulfonate	2600	1300	54	4	50
N-Nitrosodiphenylamine	2600	1700	68	3	50
N-nitroso-di-n-propylami	2600	1600	65	2	38
N-nitrosodimethylamine	2600	1300	52	2	50
Naphthalene	2600	1700	68	5	50
Nitrobenzene	2600	1600	63	0	50
Pentachlorobenzene	2600	1700	71	4	50
Pentachloronitrobenzene	2600	1900	75	5	50
Pentachlorophenol	2600	1500	44	7	47
Phenacetin	2600	2000	79	4	50
Phenanthrene	2600	4300	121	34	50
Phenol	2600	1600	66	0	35
Pyrene	2600	6100	134	32	36
Pyridine	2600	950	38	3	50
Safrole	2600	1700	68	5	50
bis(-2-Chloroethoxy)meth	2600	1600	63	2	50

Comments:

Samples in Batch: AA77771, AA77772, AA77773, AA77774, AA77775, AA77776

PARAMETER	MSD SPIKE ADDED	MSD CONCENTRATION ug/Kg	MSD % REC	RPD %	QC LIMITS RPD
1,2,4,5-Tetrachlorobenze	2600	1600	66	5	50
1,2,4-Trichlorobenzene	2600	1500	62	2	50
1,2-Dichlorobenzene	2600	1400	55	2	50
1,3-Dichlorobenzene	2600	1300	53	2	50
1,3-Dinitrobenzene	2600	1100	46	2	50
1,4-Dichlorobenzene	2600	1300	54	2	50
1,4-Naphthoquinone	2600	890	36	11	50
1-Methylnaphthalene	2600	1700	67	5	50
2,2'-oxybis(1-chloropropa	2600	1200	50	20	50
2,3,4,6-Tetrachlorophenol	2600	1800	75	5	50
2,4,5-Trichlorophenol	2600	1900	75	3	50
2,4,6-Trichlorophenol	2600	1800	74	3	50
2,4-Dichlorophenol	2600	1700	67	3	50
2,4-Dinitrophenol	2600	630	26	7	50
2,4-Dinitrotoluene	2600	2100	83	4	47
2,4-dimethylphenol	2600	1400	57	0	50
2,6-Dichlorophenol	2600	1600	64	2	50
2,6-Dinitrotoluene	2600	1900	75	3	50
2-Chloronaphthalene	2600	1600	66	3	50
2-Chlorophenol	2600	1600	65	0	50
2-Methylnaphthalene	2600	1700	68	5	50
2-Methylphenol	2600	1600	64	0	50
2-Nitroaniline	2600	2400	98	2	50
2-Nitrophenol	2600	1800	72	3	50
3&4-Methylphenol	5200	3400	69	0	50
3,3'-Dichlorobenzidine	2600	190	8	0	50
3-Methylcholanthrene	2600	1800	73	4	50
3-Nitroaniline	2600	1500	59	2	50
4,6-Dinitro-2-methylphen	2600	1100	45	2	50
4-Bromophenyl-phenylet	2600	1600	64	5	50
4-Chloro-3-methylphenol	2600	1900	77	3	33
4-Chloroaniline	2600	970	39	0	50
4-Chlorophenyl-phenylet	2600	1800	72	1	50
4-Nitroaniline	2600	1100	44	4	50
4-Nitrophenol	2600	2000	80	3	50
4-nitroquinoline-1-oxide	2600	710	29	7	50
Acenaphthene	2600	2000	77	10	19
Acenaphthylene	2600	2000	72	7	50
Acetophenone	2600	1500	62	0	50
Aniline	2600	620	25	8	50
Anthracene	2600	2500	82	8	50
Aramite	2600	2300	92	8	50
Azobenzene	2600	1800	73	3	50
Benzidine	2600	75	3	0	50
Benzo(a)anthracene	2600	4300	112	31	50
Benzo(a)pyrene	2600	4200	104	32	50
Benzo(b)fluoranthene	2600	4400	99	34	50
Benzo(g,h,i)perylene	2600	3400	95	24	50
Benzo(k)fluoranthene	2600	3800	102	28	50
Benzoic acid	2600	470	19	38	50
Benzyl alcohol	2600	1600	64	2	50
Bis(2-Chloroethyl)ether	2600	1400	58	2	50



United States Environmental Protection Agency
Office of Environmental Measurement & Evaluation
11 Technology Drive
North Chelmsford, MA 01863-2431

Laboratory Report

January 15, 2008

Cathy Young - HBR
USEPA New England Region 1
One Congress Street
Boston, MA 02114 - 2023

Project Number: 07120012
Project: Charlestown Navy Yard
Analysis: VOAs in Soil High Level Method
Analyst: Joseph Montano *1/15/08*

Analytical Procedure:

All samples were received and logged in by the laboratory according to the USEPA New England Laboratory SOP for Sample Log-in.

Sample preparation and analysis was done following the EPA Region I SOP, EIASOP-VOAGCMS8.

Samples were analyzed by GC/MS. Samples were introduced to the GC via a Tekmar preconcentrator and either an Archon auto-sampler or a Tekmar 2016 auto-sampler. The analysis SOP is based on US EPA Method 8260B, revision 2.0, 1996 and Method 5035, revision 0, 1996, from SW-846.

Date Samples Received by the Laboratory: 12/12/07

Results relate only to the items tested or to the samples as received by the Laboratory. This analytical report shall not be reproduced except in full, without written approval of the laboratory.

Report may contain multiple sections and each section will be numbered independently.

If you have any questions please call me at 617-918-8340 .

Sincerely,

Dan Boudreau

Daniel N. Boudreau
Chemistry Team Leader

28 Jan 2008 Dan B.

Qualifiers: RL = Reporting limit
ND = Not Detected above Reporting limit
NA = Not Applicable due to high sample dilutions or sample interferences
NC = Not calculated since analyte concentration is ND.
J = Estimated value
E = Estimated value exceeds the calibration range
L = Estimated value is below the calibration range
B = Analyte is associated with the lab blank or trip blank contamination. Values are qualified when the observed concentration of the contamination in the sample extract is less than 5 times the concentration in the blank.
R = No recovery was calculated since the analyte concentration is greater than four times the spike level.

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

Laboratory Blank

Client Sample ID: N/A
Date of Collection: N/A
Date of Extraction: 12/13/07
Date of Analysis: 12/13/07
Dry Weight Extracted: N/A
Wet Weight Extracted: N/A

Lab Sample ID: N/A
Matrix: Soil
Volume Purged: 5 mL
Percent Solids: N/A
Extract Dilution: 1
pH: 6

CAS Number	Compound	Concentration ug/Kg	RL ug/Kg	Qualifier
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	
71-55-6	1,1,1-Trichloroethane	ND	1.0	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroeth	ND	1.0	
79-00-5	1,1,2-Trichloroethane	ND	1.0	
75-35-4	1,1-Dichloroethylene	ND	1.0	
563-58-6	1,1-Dichloropropene	ND	1.0	
75-34-3	1,1-dichloroethane	ND	1.0	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	
96-18-4	1,2,3-Trichloropropane	ND	1.0	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	
96-12-8	1,2-Dibromo-3-Chloropropane	ND	1.0	
106-93-4	1,2-Dibromoethane	ND	1.0	
95-50-1	1,2-Dichlorobenzene	ND	1.0	
107-06-2	1,2-Dichloroethane	ND	1.0	
78-87-5	1,2-Dichloropropane	ND	1.0	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	
541-73-1	1,3-Dichlorobenzene	ND	1.0	
142-28-9	1,3-Dichloropropane	ND	1.0	
106-46-7	1,4-Dichlorobenzene	ND	1.0	
594-20-7	2,2-Dichloropropane	ND	1.0	
78-93-3	2-Butanone (MEK)	ND	1.0	
95-49-8	2-Chlorotoluene	ND	1.0	
591-78-6	2-Hexanone	ND	1.0	
67-64-1	2-Propanone (acetone)	ND	1.0	
106-43-4	4-Chlorotoluene	ND	1.0	
108-10-1	4-Methyl-2-Pentanone(MIBK)	ND	1.0	
107-13-1	Acrylonitrile	ND	1.0	
71-43-2	Benzene	ND	1.0	
108-86-1	Bromobenzene	ND	1.0	
74-97-5	Bromochloromethane	ND	1.0	
75-27-4	Bromodichloromethane	ND	1.0	
75-25-2	Bromoform	ND	1.0	
74-83-9	Bromomethane	ND	1.0	
75-15-0	Carbon Disulfide	ND	1.0	
56-23-5	Carbon tetrachloride	ND	1.0	
108-90-7	Chlorobenzene	ND	1.0	
75-00-3	Chloroethane	ND	1.0	

67-66-3	Chloroform	ND	1.0
74-87-3	Chloromethane	ND	1.0
124-48-1	Dibromochloromethane	ND	1.0
74-95-3	Dibromomethane	ND	1.0
75-71-8	Dichlorodifluoromethane	ND	1.0
60-29-7	Ethyl Ether	ND	1.0
100-41-4	Ethylbenzene	ND	1.0
87-68-3	Hexachlorobutadiene	ND	1.0
98-82-8	Isopropylbenzene	ND	1.0
108-38-3/106-42-	M/P Xylene	ND	2.0
1634-04-4	Methyl-t-Butyl Ether	ND	1.0
75-09-2	Methylene Chloride	ND	1.0
104-51-8	N-Butylbenzene	ND	1.0
103-65-1	N-Propylbenzene	ND	1.0
91-20-3	Naphthalene	ND	1.0
95-47-6	Ortho Xylene	ND	1.0
99-87-6	Para-Isopropyltoluene	ND	1.0
135-98-8	Sec-Butylbenzene	ND	1.0
100-42-5	Styrene	ND	1.0
98-06-6	Tert-Butylbenzene	ND	1.0
127-18-4	Tetrachloroethylene	ND	1.0
109-99-9	Tetrahydrofuran	ND	1.0
108-88-3	Toluene	ND	1.0
156-60-5	Trans-1,2-Dichloroethylene	ND	1.0
79-01-6	Trichloroethylene	ND	1.0
75-69-4	Trichlorofluoromethane	ND	1.0
108-05-4	Vinyl Acetate	ND	1.0
75-01-4	Vinyl Chloride	ND	1.0
10061-01-5	c-1,3-dichloropropene	ND	1.0
156-59-2	cis-1,2-Dichloroethylene	ND	1.0
10061-02-6	t-1,3-Dichloropropene	ND	1.0

Surrogate Compounds	Recoveries (%)	QC Ranges
1,2-Dichloroethane-D4	99	74 - 136
Toluene-D8	100	85 - 118
1,4-Bromofluorobenzene	99	78 - 111

Comments: The results for this aqueous laboratory blank are reported in ug/L.

Laboratory blank is associated with all samples in this project.

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

VOAs in Soil High Level Method

Client Sample ID: S-1 0-12in
Date of Collection: 12/12/2007
Date of Extraction: 12/13/07
Date of Analysis: 12/13/07
Dry Weight Extracted: 9.642 grams
Wet Weight Extracted: 12.052 grams

Lab Sample ID: AA77771
Matrix: Soil
Volume Purged: 5 mL
Percent Solids: 80%
Extract Dilution: 50
pH: N/A

CAS Number	Compound	Concentration ug/Kg	RL ug/Kg	Qualifier
630-20-6	1,1,1,2-Tetrachloroethane	ND	64	
71-55-6	1,1,1-Trichloroethane	ND	64	
79-34-5	1,1,2,2-Tetrachloroethane	ND	64	
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroeth	ND	64	
79-00-5	1,1,2-Trichloroethane	ND	64	
75-35-4	1,1-Dichloroethylene	ND	64	
563-58-6	1,1-Dichloropropene	ND	64	
75-34-3	1,1-dichloroethane	ND	64	
87-61-6	1,2,3-Trichlorobenzene	ND	64	
96-18-4	1,2,3-Trichloropropane	ND	64	
120-82-1	1,2,4-Trichlorobenzene	ND	64	
95-63-6	1,2,4-Trimethylbenzene	ND	64	
96-12-8	1,2-Dibromo-3-Chloropropane	ND	64	
106-93-4	1,2-Dibromoethane	ND	64	
95-50-1	1,2-Dichlorobenzene	ND	64	
107-06-2	1,2-Dichloroethane	ND	64	
78-87-5	1,2-Dichloropropane	ND	64	
108-67-8	1,3,5-Trimethylbenzene	ND	64	
541-73-1	1,3-Dichlorobenzene	ND	64	
142-28-9	1,3-Dichloropropane	ND	64	
106-46-7	1,4-Dichlorobenzene	ND	64	
594-20-7	2,2-Dichloropropane	ND	64	
78-93-3	2-Butanone (MEK)	ND	64	
95-49-8	2-Chlorotoluene	ND	64	
591-78-6	2-Hexanone	ND	64	
67-64-1	2-Propanone (acetone)	ND	64	
106-43-4	4-Chlorotoluene	ND	64	
108-10-1	4-Methyl-2-Pentanone(MIBK)	ND	64	
107-13-1	Acrylonitrile	ND	64	
71-43-2	Benzene	ND	64	
108-86-1	Bromobenzene	ND	64	
74-97-5	Bromochloromethane	ND	64	
75-27-4	Bromodichloromethane	ND	64	
75-25-2	Bromoform	ND	64	
74-83-9	Bromomethane	ND	64	
75-15-0	Carbon Disulfide	ND	64	
56-23-5	Carbon tetrachloride	ND	64	
108-90-7	Chlorobenzene	ND	64	
75-00-3	Chloroethane	ND	64	

67-66-3	Chloroform	ND	64
74-87-3	Chloromethane	ND	64
124-48-1	Dibromochloromethane	ND	64
74-95-3	Dibromomethane	ND	64
75-71-8	Dichlorodifluoromethane	ND	64
60-29-7	Ethyl Ether	ND	64
100-41-4	Ethylbenzene	ND	64
87-68-3	Hexachlorobutadiene	ND	64
98-82-8	Isopropylbenzene	ND	64
108-38-3/106-42-	M/P Xylene	ND	130
1634-04-4	Methyl-t-Butyl Ether	ND	64
75-09-2	Methylene Chloride	ND	64
104-51-8	N-Butylbenzene	ND	64
103-65-1	N-Propylbenzene	ND	64
91-20-3	Naphthalene	ND	64
95-47-6	Ortho Xylene	ND	64
99-87-6	Para-Isopropyltoluene	ND	64
135-98-8	Sec-Butylbenzene	ND	64
100-42-5	Styrene	ND	64
98-06-6	Tert-Butylbenzene	ND	64
127-18-4	Tetrachloroethylene	ND	64
109-99-9	Tetrahydrofuran	ND	64
108-88-3	Toluene	ND	64
156-60-5	Trans-1,2-Dichloroethylene	ND	64
79-01-6	Trichloroethylene	ND	64
75-69-4	Trichlorofluoromethane	ND	64
108-05-4	Vinyl Acetate	ND	64
75-01-4	Vinyl Chloride	ND	64
10061-01-5	c-1,3-dichloropropene	ND	64
156-59-2	cis-1,2-Dichloroethylene	ND	64
10061-02-6	t-1,3-Dichloropropene	ND	64

Surrogate Compounds	Recoveries (%)	QC Ranges
1,4-Bromofluorobenzene	98	78 - 111
1,2-Dichloroethane-D4	98	74 - 136
Toluene-D8	101	85 - 118

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

VOAs in Soil High Level Method

Client Sample ID: S-2 0-12in
Date of Collection: 12/12/2007
Date of Extraction: 12/13/07
Date of Analysis: 12/13/07
Dry Weight Extracted: 8.390 grams
Wet Weight Extracted: 11.040 grams

Lab Sample ID: AA77772
Matrix: Soil
Volume Purged: 5 mL
Percent Solids: 76%
Extract Dilution: 50
pH: N/A

CAS Number	Compound	Concentration ug/Kg	RL ug/Kg	Qualifier
630-20-6	1,1,1,2-Tetrachloroethane	ND	75	
71-55-6	1,1,1-Trichloroethane	ND	75	
79-34-5	1,1,2,2-Tetrachloroethane	ND	75	
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroeth	ND	75	
79-00-5	1,1,2-Trichloroethane	ND	75	
75-35-4	1,1-Dichloroethylene	ND	75	
563-58-6	1,1-Dichloropropene	ND	75	
75-34-3	1,1-dichloroethane	ND	75	
87-61-6	1,2,3-Trichlorobenzene	ND	75	
96-18-4	1,2,3-Trichloropropane	ND	75	
120-82-1	1,2,4-Trichlorobenzene	ND	75	
95-63-6	1,2,4-Trimethylbenzene	ND	75	
96-12-8	1,2-Dibromo-3-Chloropropane	ND	75	
106-93-4	1,2-Dibromoethane	ND	75	
95-50-1	1,2-Dichlorobenzene	ND	75	
107-06-2	1,2-Dichloroethane	ND	75	
78-87-5	1,2-Dichloropropane	ND	75	
108-67-8	1,3,5-Trimethylbenzene	ND	75	
541-73-1	1,3-Dichlorobenzene	ND	75	
142-28-9	1,3-Dichloropropane	ND	75	
106-46-7	1,4-Dichlorobenzene	ND	75	
594-20-7	2,2-Dichloropropane	ND	75	
78-93-3	2-Butanone (MEK)	ND	75	
95-49-8	2-Chlorotoluene	ND	75	
591-78-6	2-Hexanone	ND	75	
67-64-1	2-Propanone (acetone)	ND	75	
106-43-4	4-Chlorotoluene	ND	75	
108-10-1	4-Methyl-2-Pentanone(MIBK)	ND	75	
107-13-1	Acrylonitrile	ND	75	
71-43-2	Benzene	ND	75	
108-86-1	Bromobenzene	ND	75	
74-97-5	Bromochloromethane	ND	75	
75-27-4	Bromodichloromethane	ND	75	
75-25-2	Bromoform	ND	75	
74-83-9	Bromomethane	ND	75	
75-15-0	Carbon Disulfide	ND	75	
56-23-5	Carbon tetrachloride	ND	75	
108-90-7	Chlorobenzene	ND	75	
75-00-3	Chloroethane	ND	75	

67-66-3	Chloroform	ND	75
74-87-3	Chloromethane	ND	75
124-48-1	Dibromochloromethane	ND	75
74-95-3	Dibromomethane	ND	75
75-71-8	Dichlorodifluoromethane	ND	75
60-29-7	Ethyl Ether	ND	75
100-41-4	Ethylbenzene	ND	75
87-68-3	Hexachlorobutadiene	ND	75
98-82-8	Isopropylbenzene	ND	75
108-38-3/106-42-	M/P Xylene	ND	150
1634-04-4	Methyl-t-Butyl Ether	ND	75
75-09-2	Methylene Chloride	ND	75
104-51-8	N-Butylbenzene	ND	75
103-65-1	N-Propylbenzene	ND	75
91-20-3	Naphthalene	ND	75
95-47-6	Ortho Xylene	ND	75
99-87-6	Para-Isopropyltoluene	ND	75
135-98-8	Sec-Butylbenzene	ND	75
100-42-5	Styrene	ND	75
98-06-6	Tert-Butylbenzene	ND	75
127-18-4	Tetrachloroethylene	ND	75
109-99-9	Tetrahydrofuran	ND	75
108-88-3	Toluene	ND	75
156-60-5	Trans-1,2-Dichloroethylene	ND	75
79-01-6	Trichloroethylene	ND	75
75-69-4	Trichlorofluoromethane	ND	75
108-05-4	Vinyl Acetate	ND	75
75-01-4	Vinyl Chloride	ND	75
10061-01-5	c-1,3-dichloropropene	ND	75
156-59-2	cis-1,2-Dichloroethylene	ND	75
10061-02-6	t-1,3-Dichloropropene	ND	75

Surrogate Compounds	Recoveries (%)	QC Ranges
1,4-Bromofluorobenzene	99	78 - 111
1,2-Dichloroethane-D4	98	74 - 136
Toluene-D8	101	85 - 118

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

VOAs in Soil High Level Method

Client Sample ID: S-3 0-12in
Date of Collection: 12/12/2007
Date of Extraction: 12/13/07
Date of Analysis: 12/13/07
Dry Weight Extracted: 10.377 grams
Wet Weight Extracted: 13.304 grams

Lab Sample ID: AA77773
Matrix: Soil
Volume Purged: 5 mL
Percent Solids: 78%
Extract Dilution: 50
pH: N/A

CAS Number	Compound	Concentration ug/Kg	RL ug/Kg	Qualifier
630-20-6	1,1,1,2-Tetrachloroethane	ND	62	
71-55-6	1,1,1-Trichloroethane	ND	62	
79-34-5	1,1,2,2-Tetrachloroethane	ND	62	
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroeth	ND	62	
79-00-5	1,1,2-Trichloroethane	ND	62	
75-35-4	1,1-Dichloroethylene	ND	62	
563-58-6	1,1-Dichloropropene	ND	62	
75-34-3	1,1-dichloroethane	ND	62	
87-61-6	1,2,3-Trichlorobenzene	ND	62	
96-18-4	1,2,3-Trichloropropane	ND	62	
120-82-1	1,2,4-Trichlorobenzene	ND	62	
95-63-6	1,2,4-Trimethylbenzene	ND	62	
96-12-8	1,2-Dibromo-3-Chloropropane	ND	62	
106-93-4	1,2-Dibromoethane	ND	62	
95-50-1	1,2-Dichlorobenzene	ND	62	
107-06-2	1,2-Dichloroethane	ND	62	
78-87-5	1,2-Dichloropropane	ND	62	
108-67-8	1,3,5-Trimethylbenzene	ND	62	
541-73-1	1,3-Dichlorobenzene	ND	62	
142-28-9	1,3-Dichloropropane	ND	62	
106-46-7	1,4-Dichlorobenzene	ND	62	
594-20-7	2,2-Dichloropropane	ND	62	
78-93-3	2-Butanone (MEK)	ND	62	
95-49-8	2-Chlorotoluene	ND	62	
591-78-6	2-Hexanone	ND	62	
67-64-1	2-Propanone (acetone)	ND	62	
106-43-4	4-Chlorotoluene	ND	62	
108-10-1	4-Methyl-2-Pentanone(MIBK)	ND	62	
107-13-1	Acrylonitrile	ND	62	
71-43-2	Benzene	ND	62	
108-86-1	Bromobenzene	ND	62	
74-97-5	Bromochloromethane	ND	62	
75-27-4	Bromodichloromethane	ND	62	
75-25-2	Bromoform	ND	62	
74-83-9	Bromomethane	ND	62	
75-15-0	Carbon Disulfide	ND	62	
56-23-5	Carbon tetrachloride	ND	62	
108-90-7	Chlorobenzene	ND	62	
75-00-3	Chloroethane	ND	62	

67-66-3	Chloroform	ND	62
74-87-3	Chloromethane	ND	62
124-48-1	Dibromochloromethane	ND	62
74-95-3	Dibromomethane	ND	62
75-71-8	Dichlorodifluoromethane	ND	62
60-29-7	Ethyl Ether	ND	62
100-41-4	Ethylbenzene	ND	62
87-68-3	Hexachlorobutadiene	ND	62
98-82-8	Isopropylbenzene	ND	62
108-38-3/106-42-	M/P Xylene	ND	120
1634-04-4	Methyl-t-Butyl Ether	ND	62
75-09-2	Methylene Chloride	ND	62
104-51-8	N-Butylbenzene	ND	62
103-65-1	N-Propylbenzene	ND	62
91-20-3	Naphthalene	ND	62
95-47-6	Ortho Xylene	ND	62
99-87-6	Para-Isopropyltoluene	ND	62
135-98-8	Sec-Butylbenzene	ND	62
100-42-5	Styrene	ND	62
98-06-6	Tert-Butylbenzene	ND	62
127-18-4	Tetrachloroethylene	ND	62
109-99-9	Tetrahydrofuran	ND	62
108-88-3	Toluene	ND	62
156-60-5	Trans-1,2-Dichloroethylene	ND	62
79-01-6	Trichloroethylene	ND	62
75-69-4	Trichlorofluoromethane	ND	62
108-05-4	Vinyl Acetate	ND	62
75-01-4	Vinyl Chloride	ND	62
10061-01-5	c-1,3-dichloropropene	ND	62
156-59-2	cis-1,2-Dichloroethylene	ND	62
10061-02-6	t-1,3-Dichloropropene	ND	62

Surrogate Compounds	Recoveries (%)	QC Ranges
1,4-Bromofluorobenzene	98	78 - 111
1,2-Dichloroethane-D4	98	74 - 136
Toluene-D8	102	85 - 118

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

VOAs in Soil High Level Method

Client Sample ID: S-4 0-8in
Date of Collection: 12/12/2007
Date of Extraction: 12/13/07
Date of Analysis: 12/13/07
Dry Weight Extracted: 8.504 grams
Wet Weight Extracted: 10.980 grams

Lab Sample ID: AA77774
Matrix: Soil
Volume Purged: 5 mL
Percent Solids: 77%
Extract Dilution: 50
pH: N/A

CAS Number	Compound	Concentration ug/Kg	RL ug/Kg	Qualifier
630-20-6	1,1,1,2-Tetrachloroethane	ND	72	
71-55-6	1,1,1-Trichloroethane	ND	72	
79-34-5	1,1,2,2-Tetrachloroethane	ND	72	
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroeth	ND	72	
79-00-5	1,1,2-Trichloroethane	ND	72	
75-35-4	1,1-Dichloroethylene	ND	72	
563-58-6	1,1-Dichloropropene	ND	72	
75-34-3	1,1-dichloroethane	ND	72	
87-61-6	1,2,3-Trichlorobenzene	ND	72	
96-18-4	1,2,3-Trichloropropane	ND	72	
120-82-1	1,2,4-Trichlorobenzene	ND	72	
95-63-6	1,2,4-Trimethylbenzene	ND	72	
96-12-8	1,2-Dibromo-3-Chloropropane	ND	72	
106-93-4	1,2-Dibromoethane	ND	72	
95-50-1	1,2-Dichlorobenzene	ND	72	
107-06-2	1,2-Dichloroethane	ND	72	
78-87-5	1,2-Dichloropropane	ND	72	
108-67-8	1,3,5-Trimethylbenzene	ND	72	
541-73-1	1,3-Dichlorobenzene	ND	72	
142-28-9	1,3-Dichloropropane	ND	72	
106-46-7	1,4-Dichlorobenzene	ND	72	
594-20-7	2,2-Dichloropropane	ND	72	
78-93-3	2-Butanone (MEK)	ND	72	
95-49-8	2-Chlorotoluene	ND	72	
591-78-6	2-Hexanone	ND	72	
67-64-1	2-Propanone (acetone)	ND	72	
106-43-4	4-Chlorotoluene	ND	72	
108-10-1	4-Methyl-2-Pentanone(MIBK)	ND	72	
107-13-1	Acrylonitrile	ND	72	
71-43-2	Benzene	ND	72	
108-86-1	Bromobenzene	ND	72	
74-97-5	Bromochloromethane	ND	72	
75-27-4	Bromodichloromethane	ND	72	
75-25-2	Bromoform	ND	72	
74-83-9	Bromomethane	ND	72	
75-15-0	Carbon Disulfide	ND	72	
56-23-5	Carbon tetrachloride	ND	72	
108-90-7	Chlorobenzene	ND	72	
75-00-3	Chloroethane	ND	72	

67-66-3	Chloroform	ND	72
74-87-3	Chloromethane	ND	72
124-48-1	Dibromochloromethane	ND	72
74-95-3	Dibromomethane	ND	72
75-71-8	Dichlorodifluoromethane	ND	72
60-29-7	Ethyl Ether	ND	72
100-41-4	Ethylbenzene	ND	72
87-68-3	Hexachlorobutadiene	ND	72
98-82-8	Isopropylbenzene	ND	72
108-38-3/106-42-	M/P Xylene	ND	140
1634-04-4	Methyl-t-Butyl Ether	ND	72
75-09-2	Methylene Chloride	ND	72
104-51-8	N-Butylbenzene	ND	72
103-65-1	N-Propylbenzene	ND	72
91-20-3	Naphthalene	ND	72
95-47-6	Ortho Xylene	ND	72
99-87-6	Para-Isopropyltoluene	ND	72
135-98-8	Sec-Butylbenzene	ND	72
100-42-5	Styrene	ND	72
98-06-6	Tert-Butylbenzene	ND	72
127-18-4	Tetrachloroethylene	ND	72
109-99-9	Tetrahydrofuran	ND	72
108-88-3	Toluene	ND	72
156-60-5	Trans-1,2-Dichloroethylene	ND	72
79-01-6	Trichloroethylene	ND	72
75-69-4	Trichlorofluoromethane	ND	72
108-05-4	Vinyl Acetate	ND	72
75-01-4	Vinyl Chloride	ND	72
10061-01-5	c-1,3-dichloropropene	ND	72
156-59-2	cis-1,2-Dichloroethylene	ND	72
10061-02-6	t-1,3-Dichloropropene	ND	72

Surrogate Compounds	Recoveries (%)	QC Ranges
1,4-Bromofluorobenzene	99	78 - 111
1,2-Dichloroethane-D4	98	74 - 136
Toluene-D8	101	85 - 118

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

VOAs in Soil High Level Method

Client Sample ID: S-5 0-12in
Date of Collection: 12/12/2007
Date of Extraction: 12/13/07
Date of Analysis: 12/13/07
Dry Weight Extracted: 16.021 grams
Wet Weight Extracted: 18.629 grams

Lab Sample ID: AA77775
Matrix: Soil
Volume Purged: 5 mL
Percent Solids: 86%
Extract Dilution: 50
pH: N/A

CAS Number	Compound	Concentration ug/Kg	RL ug/Kg	Qualifier
630-20-6	1,1,1,2-Tetrachloroethane	ND	39	
71-55-6	1,1,1-Trichloroethane	ND	39	
79-34-5	1,1,2,2-Tetrachloroethane	ND	39	
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroeth	ND	39	
79-00-5	1,1,2-Trichloroethane	ND	39	
75-35-4	1,1-Dichloroethylene	ND	39	
563-58-6	1,1-Dichloropropene	ND	39	
75-34-3	1,1-dichloroethane	ND	39	
87-61-6	1,2,3-Trichlorobenzene	ND	39	
96-18-4	1,2,3-Trichloropropane	ND	39	
120-82-1	1,2,4-Trichlorobenzene	ND	39	
95-63-6	1,2,4-Trimethylbenzene	ND	39	
96-12-8	1,2-Dibromo-3-Chloropropane	ND	39	
106-93-4	1,2-Dibromoethane	ND	39	
95-50-1	1,2-Dichlorobenzene	ND	39	
107-06-2	1,2-Dichloroethane	ND	39	
78-87-5	1,2-Dichloropropane	ND	39	
108-67-8	1,3,5-Trimethylbenzene	ND	39	
541-73-1	1,3-Dichlorobenzene	ND	39	
142-28-9	1,3-Dichloropropane	ND	39	
106-46-7	1,4-Dichlorobenzene	ND	39	
594-20-7	2,2-Dichloropropane	ND	39	
78-93-3	2-Butanone (MEK)	ND	39	
95-49-8	2-Chlorotoluene	ND	39	
591-78-6	2-Hexanone	ND	39	
67-64-1	2-Propanone (acetone)	ND	39	
106-43-4	4-Chlorotoluene	ND	39	
108-10-1	4-Methyl-2-Pentanone(MIBK)	ND	39	
107-13-1	Acrylonitrile	ND	39	
71-43-2	Benzene	ND	39	
108-86-1	Bromobenzene	ND	39	
74-97-5	Bromochloromethane	ND	39	
75-27-4	Bromodichloromethane	ND	39	
75-25-2	Bromoform	ND	39	
74-83-9	Bromomethane	ND	39	
75-15-0	Carbon Disulfide	ND	39	
56-23-5	Carbon tetrachloride	ND	39	
108-90-7	Chlorobenzene	ND	39	
75-00-3	Chloroethane	ND	39	

67-66-3	Chloroform	ND	39
74-87-3	Chloromethane	ND	39
124-48-1	Dibromochloromethane	ND	39
74-95-3	Dibromomethane	ND	39
75-71-8	Dichlorodifluoromethane	ND	39
60-29-7	Ethyl Ether	ND	39
100-41-4	Ethylbenzene	ND	39
87-68-3	Hexachlorobutadiene	ND	39
98-82-8	Isopropylbenzene	ND	39
108-38-3/106-42-	M/P Xylene	ND	79
1634-04-4	Methyl-t-Butyl Ether	ND	39
75-09-2	Methylene Chloride	ND	39
104-51-8	N-Butylbenzene	ND	39
103-65-1	N-Propylbenzene	ND	39
91-20-3	Naphthalene	ND	39
95-47-6	Ortho Xylene	ND	39
99-87-6	Para-Isopropyltoluene	ND	39
135-98-8	Sec-Butylbenzene	ND	39
100-42-5	Styrene	ND	39
98-06-6	Tert-Butylbenzene	ND	39
127-18-4	Tetrachloroethylene	ND	39
109-99-9	Tetrahydrofuran	ND	39
108-88-3	Toluene	ND	39
156-60-5	Trans-1,2-Dichloroethylene	ND	39
79-01-6	Trichloroethylene	ND	39
75-69-4	Trichlorofluoromethane	ND	39
108-05-4	Vinyl Acetate	ND	39
75-01-4	Vinyl Chloride	ND	39
10061-01-5	c-1,3-dichloropropene	ND	39
156-59-2	cis-1,2-Dichloroethylene	ND	39
10061-02-6	t-1,3-Dichloropropene	ND	39

Surrogate Compounds	Recoveries (%)	QC Ranges
1,4-Bromofluorobenzene	98	78 - 111
1,2-Dichloroethane-D4	98	74 - 136
Toluene-D8	101	85 - 118

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

VOAs in Soil High Level Method

Client Sample ID: S-6 0-12in
Date of Collection: 12/12/2007
Date of Extraction: 12/13/07
Date of Analysis: 12/13/07
Dry Weight Extracted: 12.297 grams
Wet Weight Extracted: 13.974 grams

Lab Sample ID: AA77776
Matrix: Soil
Volume Purged: 5 mL
Percent Solids: 88%
Extract Dilution: 50
pH: N/A

CAS Number	Compound	Concentration ug/Kg	RL ug/Kg	Qualifier
630-20-6	1,1,1,2-Tetrachloroethane	ND	47	
71-55-6	1,1,1-Trichloroethane	ND	47	
79-34-5	1,1,2,2-Tetrachloroethane	ND	47	
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroeth	ND	47	
79-00-5	1,1,2-Trichloroethane	ND	47	
75-35-4	1,1-Dichloroethylene	ND	47	
563-58-6	1,1-Dichloropropene	ND	47	
75-34-3	1,1-dichloroethane	ND	47	
87-61-6	1,2,3-Trichlorobenzene	ND	47	
96-18-4	1,2,3-Trichloropropane	ND	47	
120-82-1	1,2,4-Trichlorobenzene	ND	47	
95-63-6	1,2,4-Trimethylbenzene	ND	47	
96-12-8	1,2-Dibromo-3-Chloropropane	ND	47	
106-93-4	1,2-Dibromoethane	ND	47	
95-50-1	1,2-Dichlorobenzene	ND	47	
107-06-2	1,2-Dichloroethane	ND	47	
78-87-5	1,2-Dichloropropane	ND	47	
108-67-8	1,3,5-Trimethylbenzene	ND	47	
541-73-1	1,3-Dichlorobenzene	ND	47	
142-28-9	1,3-Dichloropropane	ND	47	
106-46-7	1,4-Dichlorobenzene	ND	47	
594-20-7	2,2-Dichloropropane	ND	47	
78-93-3	2-Butanone (MEK)	ND	47	
95-49-8	2-Chlorotoluene	ND	47	
591-78-6	2-Hexanone	ND	47	
67-64-1	2-Propanone (acetone)	ND	47	
106-43-4	4-Chlorotoluene	ND	47	
108-10-1	4-Methyl-2-Pentanone(MIBK)	ND	47	
107-13-1	Acrylonitrile	ND	47	
71-43-2	Benzene	ND	47	
108-86-1	Bromobenzene	ND	47	
74-97-5	Bromochloromethane	ND	47	
75-27-4	Bromodichloromethane	ND	47	
75-25-2	Bromoform	ND	47	
74-83-9	Bromomethane	ND	47	
75-15-0	Carbon Disulfide	ND	47	
56-23-5	Carbon tetrachloride	ND	47	
108-90-7	Chlorobenzene	ND	47	
75-00-3	Chloroethane	ND	47	

67-66-3	Chloroform	ND	47
74-87-3	Chloromethane	ND	47
124-48-1	Dibromochloromethane	ND	47
74-95-3	Dibromomethane	ND	47
75-71-8	Dichlorodifluoromethane	ND	47
60-29-7	Ethyl Ether	ND	47
100-41-4	Ethylbenzene	ND	47
87-68-3	Hexachlorobutadiene	ND	47
98-82-8	Isopropylbenzene	ND	47
108-38-3/106-42-	M/P Xylene	ND	95
1634-04-4	Methyl-t-Butyl Ether	ND	47
75-09-2	Methylene Chloride	ND	47
104-51-8	N-Butylbenzene	ND	47
103-65-1	N-Propylbenzene	ND	47
91-20-3	Naphthalene	ND	47
95-47-6	Ortho Xylene	ND	47
99-87-6	Para-Isopropyltoluene	ND	47
135-98-8	Sec-Butylbenzene	ND	47
100-42-5	Styrene	ND	47
98-06-6	Tert-Butylbenzene	ND	47
127-18-4	Tetrachloroethylene	ND	47
109-99-9	Tetrahydrofuran	ND	47
108-88-3	Toluene	ND	47
156-60-5	Trans-1,2-Dichloroethylene	ND	47
79-01-6	Trichloroethylene	ND	47
75-69-4	Trichlorofluoromethane	ND	47
108-05-4	Vinyl Acetate	ND	47
75-01-4	Vinyl Chloride	ND	47
10061-01-5	c-1,3-dichloropropene	ND	47
156-59-2	cis-1,2-Dichloroethylene	ND	47
10061-02-6	t-1,3-Dichloropropene	ND	47

Surrogate Compounds	Recoveries (%)	QC Ranges
1,4-Bromofluorobenzene	98	78 - 111
1,2-Dichloroethane-D4	98	74 - 136
Toluene-D8	100	85 - 118

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

VOAs in Soil High Level Method

Client Sample ID: Methanol Blank
Date of Collection: 12/12/2007
Date of Extraction: 12/13/07
Date of Analysis: 12/13/07
Dry Weight Extracted: N/A
Wet Weight Extracted: N/A

Lab Sample ID: AA77780
Matrix: Blank
Volume Purged: 5 mL
Percent Solids: N/A
Extract Dilution: 50
pH: N/A

CAS Number	Compound	Concentration ug/Kg	RL ug/Kg	Qualifier
630-20-6	1,1,1,2-Tetrachloroethane	ND	50	
71-55-6	1,1,1-Trichloroethane	ND	50	
79-34-5	1,1,2,2-Tetrachloroethane	ND	50	
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroeth	ND	50	
79-00-5	1,1,2-Trichloroethane	ND	50	
75-35-4	1,1-Dichloroethylene	ND	50	
563-58-6	1,1-Dichloropropene	ND	50	
75-34-3	1,1-dichloroethane	ND	50	
87-61-6	1,2,3-Trichlorobenzene	ND	50	
96-18-4	1,2,3-Trichloropropane	ND	50	
120-82-1	1,2,4-Trichlorobenzene	ND	50	
95-63-6	1,2,4-Trimethylbenzene	ND	50	
96-12-8	1,2-Dibromo-3-Chloropropane	ND	50	
106-93-4	1,2-Dibromoethane	ND	50	
95-50-1	1,2-Dichlorobenzene	ND	50	
107-06-2	1,2-Dichloroethane	ND	50	
78-87-5	1,2-Dichloropropane	ND	50	
108-67-8	1,3,5-Trimethylbenzene	ND	50	
541-73-1	1,3-Dichlorobenzene	ND	50	
142-28-9	1,3-Dichloropropane	ND	50	
106-46-7	1,4-Dichlorobenzene	ND	50	
594-20-7	2,2-Dichloropropane	ND	50	
78-93-3	2-Butanone (MEK)	ND	50	
95-49-8	2-Chlorotoluene	ND	50	
591-78-6	2-Hexanone	ND	50	
67-64-1	2-Propanone (acetone)	ND	50	
106-43-4	4-Chlorotoluene	ND	50	
108-10-1	4-Methyl-2-Pentanone(MIBK)	ND	50	
107-13-1	Acrylonitrile	ND	50	
71-43-2	Benzene	ND	50	
108-86-1	Bromobenzene	ND	50	
74-97-5	Bromochloromethane	ND	50	
75-27-4	Bromodichloromethane	ND	50	
75-25-2	Bromoform	ND	50	
74-83-9	Bromomethane	ND	50	
75-15-0	Carbon Disulfide	ND	50	
56-23-5	Carbon tetrachloride	ND	50	
108-90-7	Chlorobenzene	ND	50	
75-00-3	Chloroethane	ND	50	

67-66-3	Chloroform	ND	50
74-87-3	Chloromethane	ND	50
124-48-1	Dibromochloromethane	ND	50
74-95-3	Dibromomethane	ND	50
75-71-8	Dichlorodifluoromethane	ND	50
60-29-7	Ethyl Ether	ND	50
100-41-4	Ethylbenzene	ND	50
87-68-3	Hexachlorobutadiene	ND	50
98-82-8	Isopropylbenzene	ND	50
108-38-3/106-42-	M/P Xylene	ND	100
1634-04-4	Methyl-t-Butyl Ether	ND	50
75-09-2	Methylene Chloride	ND	50
104-51-8	N-Butylbenzene	ND	50
103-65-1	N-Propylbenzene	ND	50
91-20-3	Naphthalene	ND	50
95-47-6	Ortho Xylene	ND	50
99-87-6	Para-Isopropyltoluene	ND	50
135-98-8	Sec-Butylbenzene	ND	50
100-42-5	Styrene	ND	50
98-06-6	Tert-Butylbenzene	ND	50
127-18-4	Tetrachloroethylene	ND	50
109-99-9	Tetrahydrofuran	ND	50
108-88-3	Toluene	ND	50
156-60-5	Trans-1,2-Dichloroethylene	ND	50
79-01-6	Trichloroethylene	ND	50
75-69-4	Trichlorofluoromethane	ND	50
108-05-4	Vinyl Acetate	ND	50
75-01-4	Vinyl Chloride	ND	50
10061-01-5	c-1,3-dichloropropene	ND	50
156-59-2	cis-1,2-Dichloroethylene	ND	50
10061-02-6	t-1,3-Dichloropropene	ND	50

Surrogate Compounds	Recoveries (%)	QC Ranges
1,4-Bromofluorobenzene	100	78 - 111
1,2-Dichloroethane-D4	97	74 - 136
Toluene-D8	102	85 - 118

Comments: The results for this methanol blank sample are reported in ug/L.

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

VOA MATRIX SPIKE (MS) / MATRIX SPIKE DUPLICATE (MSD) RECOVERY

Charlestown Navy Yard

Sample ID: AA77771

PARAMETER	SPIKE ADDED ug/Kg	SAMPLE CONCENTRATION ug/Kg	MS CONCENTRATION ug/Kg	MS % REC	QC LIMITS (% REC)
1,1,1,2-Tetrachloroethane	1300	ND	1200	96	70 - 130
1,1,1-Trichloroethane	1300	ND	1300	101	70 - 130
1,1,2,2-Tetrachloroethane	1300	ND	1300	99	70 - 130
1,1,2-Trichloro-1,2,2-Trifluoro	1300	ND	1400	112	70 - 130
1,1,2-Trichloroethane	1300	ND	1300	105	70 - 130
1,1-Dichloroethylene	1300	ND	1400	105	80 - 138
1,1-Dichloropropene	1300	ND	1300	98	70 - 130
1,1-dichloroethane	1300	ND	1400	108	70 - 130
1,2,3-Trichlorobenzene	1300	ND	1300	99	70 - 130
1,2,3-Trichloropropane	1300	ND	1500	114	70 - 130
1,2,4-Trichlorobenzene	1300	ND	1300	98	70 - 130
1,2,4-Trimethylbenzene	1300	ND	1300	104	70 - 130
1,2-Dibromo-3-Chloropropane	1300	ND	1000	79	70 - 130
1,2-Dibromoethane	1300	ND	1300	99	70 - 130
1,2-Dichlorobenzene	1300	ND	1300	101	70 - 130
1,2-Dichloroethane	1300	ND	1300	100	70 - 130
1,2-Dichloropropane	1300	ND	1400	107	70 - 130
1,3,5-Trimethylbenzene	1300	ND	1300	104	70 - 130
1,3-Dichlorobenzene	1300	ND	1300	103	70 - 130
1,3-Dichloropropane	1300	ND	1400	106	70 - 130
1,4-Dichlorobenzene	1300	ND	1300	102	70 - 130
2,2-Dichloropropane	1300	ND	1400	105	70 - 130
2-Butanone (MEK)	1300	ND	1200	91	70 - 130
2-Chlorotoluene	1300	ND	1300	104	70 - 130
2-Hexanone	1300	ND	1300	104	70 - 130
2-Propanone (acetone)	1300	ND	890	69	70 - 130
4-Chlorotoluene	1300	ND	1300	103	70 - 130
4-Methyl-2-Pentanone(MIBK)	1300	ND	1500	116	70 - 130
Acrylonitrile	1300	ND	1400	107	70 - 130
Benzene	1300	ND	1400	109	87 - 125
Bromobenzene	1300	ND	1300	101	70 - 130
Bromochloromethane	1300	ND	1400	105	70 - 130
Bromodichloromethane	1300	ND	1200	95	70 - 130
Bromoform	1300	ND	1000	78	70 - 130
Bromomethane	1300	ND	1400	110	70 - 130
Carbon Disulfide	1300	ND	1300	101	70 - 130
Carbon tetrachloride	1300	ND	1300	97	70 - 130
Chlorobenzene	1300	ND	1400	108	78 - 131
Chloroethane	1300	ND	1500	117	70 - 130
Chloroform	1300	ND	1300	105	70 - 130
Chloromethane	1300	ND	1700	129	70 - 130
Dibromochloromethane	1300	ND	1200	91	70 - 130
Dibromomethane	1300	ND	1300	103	70 - 130
Dichlorodifluoromethane	1300	ND	1800	143	70 - 130

Ethyl Ether	1300	ND	1300	99	70 - 130
Ethylbenzene	1300	ND	1300	105	70 - 130
Hexachlorobutadiene	1300	ND	1100	85	70 - 130
Isopropylbenzene	1300	ND	1500	113	70 - 130
M/P Xylene	2600	ND	2700	107	70 - 130
Methyl-t-Butyl Ether	1300	ND	1300	99	70 - 130
Methylene Chloride	1300	ND	1400	107	70 - 130
N-Butylbenzene	1300	ND	1400	105	70 - 130
N-Propylbenzene	1300	ND	1400	107	70 - 130
Naphthalene	1300	ND	1300	103	70 - 130
Ortho Xylene	1300	ND	1400	105	70 - 130
Para-Isopropyltoluene	1300	ND	1400	108	70 - 130
Sec-Butylbenzene	1300	ND	1400	107	70 - 130
Styrene	1300	ND	1400	105	70 - 130
Tert-Butylbenzene	1300	ND	1300	103	70 - 130
Tetrachloroethylene	1300	ND	1300	105	70 - 130
Tetrahydrofuran	1300	ND	1300	100	70 - 130
Toluene	1300	ND	1400	107	66 - 150
Trans-1,2-Dichloroethylene	1300	ND	1300	100	70 - 130
Trichloroethylene	1300	ND	1300	104	78 - 102
Trichlorofluoromethane	1300	ND	1500	113	70 - 130
Vinyl Acetate	1300	ND	1200	95	70 - 130
Vinyl Chloride	1300	ND	1100	85	70 - 130
c-1,3-dichloropropene	1300	ND	1400	109	70 - 130
cis-1,2-Dichloroethylene	1300	ND	1400	106	70 - 130
t-1,3-Dichloropropene	1300	ND	1300	103	70 - 130

Comments:

PARAMETER	MSD SPIKE ADDED	MSD CONCENTRATION ug/Kg	MSD % REC	RPD %	QC LIMITS RPD
1,1,1,2-Tetrachloroethane	1300	1200	93	3	40
1,1,1-Trichloroethane	1300	1300	100	0	40
1,1,2,2-Tetrachloroethane	1300	1200	97	3	40
1,1,2-Trichloro-1,2,2-Trif	1300	1400	109	2	40
1,1,2-Trichloroethane	1300	1300	100	4	40
1,1-Dichloroethylene	1300	1300	104	1	52
1,1-Dichloropropene	1300	1300	98	0	40
1,1-dichloroethane	1300	1400	107	1	40
1,2,3-Trichlorobenzene	1300	1300	98	1	40
1,2,3-Trichloropropane	1300	1400	111	3	40
1,2,4-Trichlorobenzene	1300	1300	98	0	40
1,2,4-Trimethylbenzene	1300	1300	103	1	40
1,2-Dibromo-3-Chloropro	1300	1000	79	0	40
1,2-Dibromoethane	1300	1200	96	3	40
1,2-Dichlorobenzene	1300	1300	101	1	40
1,2-Dichloroethane	1300	1300	99	1	40
1,2-Dichloropropane	1300	1300	105	2	40
1,3,5-Trimethylbenzene	1300	1300	103	1	40
1,3-Dichlorobenzene	1300	1300	103	0	40
1,3-Dichloropropane	1300	1300	101	6	40
1,4-Dichlorobenzene	1300	1300	100	1	40
2,2-Dichloropropane	1300	1300	100	5	40
2-Butanone (MEK)	1300	1200	90	1	40
2-Chlorotoluene	1300	1300	103	2	40
2-Hexanone	1300	1300	101	3	40
2-Propanone (acetone)	1300	880	69	1	40
4-Chlorotoluene	1300	1300	103	1	40
4-Methyl-2-Pentanone(M	1300	1400	111	4	40
Acrylonitrile	1300	1300	103	3	40
Benzene	1300	1400	106	3	24
Bromobenzene	1300	1300	101	0	40
Bromochloromethane	1300	1300	104	1	40
Bromodichloromethane	1300	1200	93	2	40
Bromoform	1300	970	75	4	40
Bromomethane	1300	1400	109	1	40
Carbon Disulfide	1300	1300	98	3	40
Carbon tetrachloride	1300	1200	97	1	40
Chlorobenzene	1300	1400	106	2	34
Chloroethane	1300	1500	115	2	40
Chloroform	1300	1300	102	2	40
Chloromethane	1300	1600	127	2	40
Dibromochloromethane	1300	1200	89	2	40
Dibromomethane	1300	1300	100	3	40
Dichlorodifluoromethane	1300	1800	137	4	40
Ethyl Ether	1300	1200	95	4	40
Ethylbenzene	1300	1300	103	2	40
Hexachlorobutadiene	1300	1200	93	9	40
Isopropylbenzene	1300	1400	112	1	40
M/P Xylene	2600	2700	105	2	40
Methyl-t-Butyl Ether	1300	1200	96	3	40
Methylene Chloride	1300	1400	107	0	40
N-Butylbenzene	1300	1300	104	1	40

N-Propylbenzene	1300	1400	106	1	40
Naphthalene	1300	1300	101	2	40
Ortho Xylene	1300	1300	103	2	40
Para-Isopropyltoluene	1300	1400	107	1	40
Sec-Butylbenzene	1300	1400	105	2	40
Styrene	1300	1300	103	2	40
Tert-Butylbenzene	1300	1300	104	1	40
Tetrachloroethylene	1300	1400	105	1	40
Tetrahydrofuran	1300	1300	97	3	40
Toluene	1300	1400	105	2	33
Trans-1,2-Dichloroethyle	1300	1200	92	9	40
Trichloroethylene	1300	1300	102	3	27
Trichlorofluoromethane	1300	1400	112	0	40
Vinyl Acetate	1300	1200	94	2	40
Vinyl Chloride	1300	1100	82	3	40
c-1,3-dichloropropene	1300	1400	105	3	40
cis-1,2-Dichloroethylene	1300	1300	104	2	40
t-1,3-Dichloropropene	1300	1300	101	2	40

Comments:

Samples in Batch: AA77771, AA77772, AA77773, AA77774, AA77775, AA77776, AA77780

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Laboratory Duplicate Results

Charlestown Navy Yard

Sample ID: AA77771

PARAMETER	SAMPLE RESULT ug/Kg	SAMPLE DUPLICATE RESULT ug/Kg	PRECISION RPD %	QC LIMITS
1,1,1,2-Tetrachloroethane	ND	ND	ND	40
1,1,1-Trichloroethane	ND	ND	ND	40
1,1,2,2-Tetrachloroethane	ND	ND	ND	40
1,1,2-Trichloro-1,2,2-Trifluoroeth	ND	ND	ND	40
1,1,2-Trichloroethane	ND	ND	ND	40
1,1-Dichloroethylene	ND	ND	ND	40
1,1-Dichloropropene	ND	ND	ND	40
1,1-dichloroethane	ND	ND	ND	40
1,2,3-Trichlorobenzene	ND	ND	ND	40
1,2,3-Trichloropropane	ND	ND	ND	40
1,2,4-Trichlorobenzene	ND	ND	ND	40
1,2,4-Trimethylbenzene	ND	ND	ND	40
1,2-Dibromo-3-Chloropropane	ND	ND	ND	40
1,2-Dibromoethane	ND	ND	ND	40
1,2-Dichlorobenzene	ND	ND	ND	40
1,2-Dichloroethane	ND	ND	ND	40
1,2-Dichloropropane	ND	ND	ND	40
1,3,5-Trimethylbenzene	ND	ND	ND	40
1,3-Dichlorobenzene	ND	ND	ND	40
1,3-Dichloropropane	ND	ND	ND	40
1,4-Dichlorobenzene	ND	ND	ND	40
2,2-Dichloropropane	ND	ND	ND	40
2-Butanone (MEK)	ND	ND	ND	40
2-Chlorotoluene	ND	ND	ND	40
2-Hexanone	ND	ND	ND	40
2-Propanone (acetone)	ND	ND	ND	40
4-Chlorotoluene	ND	ND	ND	40
4-Methyl-2-Pentanone(MIBK)	ND	ND	ND	40
Acrylonitrile	ND	ND	ND	40
Benzene	ND	ND	ND	40
Bromobenzene	ND	ND	ND	40
Bromochloromethane	ND	ND	ND	40
Bromodichloromethane	ND	ND	ND	40
Bromoform	ND	ND	ND	40
Bromomethane	ND	ND	ND	40
Carbon Disulfide	ND	ND	ND	40
Carbon tetrachloride	ND	ND	ND	40
Chlorobenzene	ND	ND	ND	40
Chloroethane	ND	ND	ND	40
Chloroform	ND	ND	ND	40
Chloromethane	ND	ND	ND	40
Dibromochloromethane	ND	ND	ND	40
Dibromomethane	ND	ND	ND	40
Dichlorodifluoromethane	ND	ND	ND	40
Ethyl Ether	ND	ND	ND	40
Ethylbenzene	ND	ND	ND	40
Hexachlorobutadiene	ND	ND	ND	40
Isopropylbenzene	ND	ND	ND	40
M/P Xylene	ND	ND	ND	40
Methyl-t-Butyl Ether	ND	ND	ND	40

Methylene Chloride	ND	ND	ND	40
N-Butylbenzene	ND	ND	ND	40
N-Propylbenzene	ND	ND	ND	40
Naphthalene	ND	ND	ND	40
Ortho Xylene	ND	ND	ND	40
Para-Isopropyltoluene	ND	ND	ND	40
Sec-Butylbenzene	ND	ND	ND	40
Styrene	ND	ND	ND	40
Tert-Butylbenzene	ND	ND	ND	40
Tetrachloroethylene	ND	ND	ND	40
Tetrahydrofuran	ND	ND	ND	40
Toluene	ND	ND	ND	40
Trans-1,2-Dichloroethylene	ND	ND	ND	40
Trichloroethylene	ND	ND	ND	40
Trichlorofluoromethane	ND	ND	ND	40
Vinyl Acetate	ND	ND	ND	40
Vinyl Chloride	ND	ND	ND	40
c-1,3-dichloropropene	ND	ND	ND	40
cis-1,2-Dichloroethylene	ND	ND	ND	40
t-1,3-Dichloropropene	ND	ND	ND	40

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

LABORATORY FORTIFIED BLANK (LFB) AND DUPLICATE (LFB Dup) RECOVERY

Charlestown Navy Yard

COMPOUND	SPIKE ADDED ug/Kg	LFB CONCENTRATION ug/Kg	LFB RECOVERY %	QC LIMITS (% REC)
1,1,1,2-Tetrachloroethane	20	18	92	60 - 140
1,1,1-Trichloroethane	20	19	95	60 - 140
1,1,2,2-Tetrachloroethane	20	19	93	60 - 140
1,1,2-Trichloro-1,2,2-Trifluoroeth	20	22	109	60 - 140
1,1,2-Trichloroethane	20	19	96	60 - 140
1,1-Dichloroethylene	20	20	100	7 - 148
1,1-Dichloropropene	20	19	94	60 - 140
1,1-dichloroethane	20	20	100	60 - 140
1,2,3-Trichlorobenzene	20	19	94	60 - 140
1,2,3-Trichloropropane	20	21	105	60 - 140
1,2,4-Trichlorobenzene	20	19	95	60 - 140
1,2,4-Trimethylbenzene	20	20	99	60 - 140
1,2-Dibromo-3-Chloropropane	20	16	78	60 - 140
1,2-Dibromoethane	20	18	91	60 - 140
1,2-Dichlorobenzene	20	19	96	60 - 140
1,2-Dichloroethane	20	19	93	60 - 140
1,2-Dichloropropane	20	20	101	60 - 140
1,3,5-Trimethylbenzene	20	20	98	60 - 140
1,3-Dichlorobenzene	20	19	96	60 - 140
1,3-Dichloropropane	20	19	96	60 - 140
1,4-Dichlorobenzene	20	19	96	60 - 140
2,2-Dichloropropane	20	20	101	60 - 140
2-Butanone (MEK)	20	16	79	60 - 140
2-Chlorotoluene	20	20	99	60 - 140
2-Hexanone	20	18	90	60 - 140
2-Propanone (acetone)	20	13	67	60 - 140
4-Chlorotoluene	20	20	98	60 - 140
4-Methyl-2-Pentanone(MIBK)	20	20	100	60 - 140
Acrylonitrile	20	19	97	60 - 140
Benzene	20	20	100	39 - 119
Bromobenzene	20	19	95	60 - 140
Bromochloromethane	20	20	98	60 - 140
Bromodichloromethane	20	19	93	60 - 140
Bromoform	20	16	78	60 - 140
Bromomethane	20	20	99	60 - 140
Carbon Disulfide	20	19	93	60 - 140
Carbon tetrachloride	20	19	94	60 - 140
Chlorobenzene	20	20	100	48 - 131
Chloroethane	20	22	108	60 - 140
Chloroform	20	19	97	60 - 140
Chloromethane	20	23	116	60 - 140
Dibromochloromethane	20	18	91	60 - 140
Dibromomethane	20	19	94	60 - 140
Dichlorodifluoromethane	20	28	138	60 - 140

Ethyl Ether	20	18	92	60 - 140
Ethylbenzene	20	19	97	60 - 140
Hexachlorobutadiene	20	17	87	60 - 140
Isopropylbenzene	20	21	107	60 - 140
M/P Xylene	40	40	100	60 - 140
Methyl-t-Butyl Ether	20	18	92	60 - 140
Methylene Chloride	20	20	102	60 - 140
N-Butylbenzene	20	20	99	60 - 140
N-Propylbenzene	20	20	100	60 - 140
Naphthalene	20	18	92	60 - 140
Ortho Xylene	20	20	98	60 - 140
Para-Isopropyltoluene	20	21	103	60 - 140
Sec-Butylbenzene	20	20	100	60 - 140
Styrene	20	19	97	60 - 140
Tert-Butylbenzene	20	20	98	60 - 140
Tetrachloroethylene	20	19	93	60 - 140
Tetrahydrofuran	20	18	92	60 - 140
Toluene	20	20	99	43 - 136
Trans-1,2-Dichloroethylene	20	17	84	60 - 140
Trichloroethylene	20	19	97	37 - 130
Trichlorofluoromethane	20	22	112	60 - 140
Vinyl Acetate	20	19	94	60 - 140
Vinyl Chloride	20	23	117	60 - 140
c-1,3-dichloropropene	20	20	100	60 - 140
cis-1,2-Dichloroethylene	20	20	99	60 - 140
t-1,3-Dichloropropene	20	19	95	60 - 140

COMPOUND	LFB Dup CONCENTRATION ug/Kg	LFB Dup RECOVERY %	RPD %	QC LIMITS RPD
1,1,1,2-Tetrachloroethane	18	91	2	40
1,1,1-Trichloroethane	19	97	3	40
1,1,2,2-Tetrachloroethane	19	95	2	40
1,1,2-Trichloro-1,2,2-Trifluo	22	108	1	40
1,1,2-Trichloroethane	20	101	5	40
1,1-Dichloroethylene	20	102	2	52
1,1-Dichloropropene	19	94	0	40
1,1-dichloroethane	21	107	6	40
1,2,3-Trichlorobenzene	19	96	3	40
1,2,3-Trichloropropane	22	110	4	40
1,2,4-Trichlorobenzene	19	95	0	40
1,2,4-Trimethylbenzene	20	102	3	40
1,2-Dibromo-3-Chloropropa	15	77	1	40
1,2-Dibromoethane	19	97	6	40
1,2-Dichlorobenzene	20	100	4	40
1,2-Dichloroethane	20	99	6	40
1,2-Dichloropropane	21	107	6	40
1,3,5-Trimethylbenzene	21	103	5	40
1,3-Dichlorobenzene	20	102	6	40
1,3-Dichloropropane	20	102	6	40
1,4-Dichlorobenzene	20	99	3	40
2,2-Dichloropropane	17	86	16	40
2-Butanone (MEK)	16	78	1	40
2-Chlorotoluene	21	103	5	40
2-Hexanone	18	88	2	40
2-Propanone (acetone)	12	61	9	40
4-Chlorotoluene	21	103	5	40
4-Methyl-2-Pentanone(MIB	20	100	0	40
Acrylonitrile	21	104	7	40
Benzene	21	107	7	24
Bromobenzene	20	101	6	40
Bromochloromethane	20	102	4	40
Bromodichloromethane	18	91	2	40
Bromoform	14	69	12	40
Bromomethane	21	104	5	40
Carbon Disulfide	19	97	4	40
Carbon tetrachloride	19	93	1	40
Chlorobenzene	21	106	6	34
Chloroethane	23	115	6	40
Chloroform	21	103	6	40
Chloromethane	25	125	8	40
Dibromochloromethane	17	85	7	40
Dibromomethane	20	98	5	40
Dichlorodifluoromethane	28	138	0	40
Ethyl Ether	19	95	4	40
Ethylbenzene	20	102	6	40
Hexachlorobutadiene	17	84	4	40
Isopropylbenzene	22	111	4	40
M/P Xylene	42	106	6	40
Methyl-t-Butyl Ether	19	94	3	40
Methylene Chloride	22	108	6	40
N-Butylbenzene	20	100	2	40

N-Propylbenzene	21	104	4	40
Naphthalene	20	98	6	40
Ortho Xylene	21	104	7	40
Para-Isopropyltoluene	21	105	2	40
Sec-Butylbenzene	21	103	3	40
Styrene	21	104	7	40
Tert-Butylbenzene	20	102	4	40
Tetrachloroethylene	24	121	26	40
Tetrahydrofuran	20	98	6	40
Toluene	21	106	7	33
Trans-1,2-Dichloroethylene	18	91	7	40
Trichloroethylene	21	103	6	27
Trichlorofluoromethane	22	111	1	40
Vinyl Acetate	17	84	11	40
Vinyl Chloride	24	121	3	40
c-1,3-dichloropropene	21	105	4	40
cis-1,2-Dichloroethylene	21	105	6	40
t-1,3-Dichloropropene	19	97	2	40

Samples in Batch: AA77771, AA77772, AA77773, AA77774, AA77775, AA77776, AA77780

Comments: Acetone and dichlorodifluoromethane did not meet the acceptable QC specifications in the MS/MS duplicate study.



SPECTRUM ANALYTICAL, INC.

Featuring

HANBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 1

PN: 07/200/12.

Special Handling:

- ☐ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed:
- ☐ All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes.
- ☐ Samples disposed of after 60 days unless otherwise instructed.

Report To: Svensen Consulting Inc,

Invoice To: EPA-Region I

Project No: EG004-003

9 Research Drive, Suite 2

Catherine Young

Location: Charlestown Navy Yard

Project Mgr.: Shawn Rising

P.O. No.:

RON:

State: MA

1= $\text{Na}_2\text{S}_2\text{O}_3$ 2= HCl 3= H_2SO_4 4= HNO_3 5= NaOH 6=Ascorbic Acid
7= CH_3OH 8= NaHSO_4 9=Ice 10=

DW=Drinking Water GW=Groundwater W/W=Wastewater
O=Oil SW=Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Preservative	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	Containers:	Analyses:	QA Reporting Notes:
													(check if needed)
	S-1 6-12"	12/12/07	8:30am	C	SO	79	3	4				X VOC's via 8260B	
	S-2 0-12"		8:45am	C	SO	3	3	4				X SVOC w/TIC's	
	S-3 0-12"		9:00am	C	SO	3	4	4				X RCRA-8 Total Metals	
	S-4 0-8"		9:15am	C	SO	3	4	4				X Mercury (Separate container)	
	S-5 0-12"		9:30am	C	SO	3	4	4				X Asbestos (TEM)	
	S-6 0-12"		9:45am	C	SO	3	4	4					
	AS-1 Surface		10:00am	C	SO	9							
	AS-2 Surface		10:15am	C	SO								
	AS-3 Surface			C	SO								
	Methanol blank					7	1						

Relinquished by:

Received by:

Date:

Time:

☐ Fax results when available to ()

☒ E-mail to SVSIS@SVAcon.com

EDD Format

PDF

Condition upon receipt: ☒ Faxed ☐ Ambient ☐ °C

Shawn Rising

Catherine Young

12/12 1:30pm

12/12/07 2:30pm

Appendix E2

Bulk Asbestos Laboratory Results – NERL



United States Environmental Protection Agency
Office of Environmental Measurement & Evaluation
11 Technology Drive
North Chelmsford, MA 01863-2431

Laboratory Report

January 2, 2008

Cathy Young - HBR
USEPA New England Region 1
One Congress Street
Boston, MA 02114 - 2023

Project Number: 07120012

Project: Charlestown Navy Yard

Analysis: Bulk Asbestos Analysis by PLM

Analyst: Scott Clifford *SC* 1/2/08

Analytical Procedure:

All samples were received and logged in by the laboratory according to the USEPA New England SOP for Sample Log-in.

Sample preparation and Analysis was done following USEPA ASED3 SOP for Asbestos in Sol.
Analytical Method: Polarized Light Microscope (PLM) with Dispersion Staining.

All quantities are estimated volume percent.

Date Samples Received by the Laboratory: 12/12/07

Results relate only to the items tested or to the samples as received by the Laboratory. This analytical report shall not be reproduced except in full, without written approval of the laboratory.

If you have any questions please call me at 617-918-8340.

Sincerely,

Dan Boudreau 1/3/08
Dan Boudreau
Chemistry Team Leader

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard
Bulk Asbestos Analysis by PLM

Client Sample ID: S-1 0-12in
Date of Collection: 12/12/2007
Date of Extraction: 1/2/08
Date of Analysis: 1/2/08

Lab Sample ID: AA77771
Matrix: Soil

CAS Number	Compound	Concentration %	RL %	Qualifier
	Actinolite	ND	1.0	
	Amosite	ND	1.0	
	Anthophyllite	ND	1.0	
	Chrysotile	ND	1.0	
	Crocidolite	ND	1.0	
	Tremolite	ND	1.0	

Comments: Chrysotile asbestos present, but less than 1%.

Client Sample ID: S-3 0-12in
Date of Collection: 12/12/2007
Date of Extraction: 1/2/08
Date of Analysis: 1/2/08

Lab Sample ID: AA77773
Matrix: Soil

CAS Number	Compound	Concentration %	RL %	Qualifier
	Actinolite	ND	1.0	
	Amosite	ND	1.0	
	Anthophyllite	ND	1.0	
	Chrysotile	ND	1.0	
	Crocidolite	ND	1.0	
	Tremolite	ND	1.0	

Comments: Chrysotile asbestos present, but less than 1%.

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard
Bulk Asbestos Analysis by PLM

Client Sample ID: S-4 0-8in
Date of Collection: 12/12/2007
Date of Extraction: 1/2/08
Date of Analysis: 1/2/08

Lab Sample ID: AA77774
Matrix: Soil

CAS Number	Compound	Concentration %	RL %	Qualifier
	Actinolite	ND	1.0	
	Amosite	ND	1.0	
	Anthophyllite	ND	1.0	
	Chrysotile	ND	1.0	
	Crocidolite	ND	1.0	
	Tremolite	ND	1.0	

Comments: Chrysotile asbestos present, but less than 1%.

Client Sample ID: S-6 0-12in
Date of Collection: 12/12/2007
Date of Extraction: 1/2/08
Date of Analysis: 1/2/08

Lab Sample ID: AA77776
Matrix: Soil

CAS Number	Compound	Concentration %	RL %	Qualifier
	Actinolite	ND	1.0	
	Amosite	ND	1.0	
	Anthophyllite	ND	1.0	
	Chrysotile	ND	1.0	
	Crocidolite	ND	1.0	
	Tremolite	ND	1.0	

Comments: Chrysotile asbestos present, but less than 1%.

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

Bulk Asbestos Analysis by PLM

Client Sample ID: AS-1 surface
Date of Collection: 12/12/2007
Date of Extraction: 1/2/08
Date of Analysis: 1/2/08

Lab Sample ID: AA77777
Matrix: Soil

CAS Number	Compound	Concentration %	RL %	Qualifier
	Actinolite	ND	1.0	
	Amosite	ND	1.0	
	Anthophyllite	ND	1.0	
	Chrysotile	ND	1.0	
	Crocidolite	ND	1.0	
	Tremolite	ND	1.0	

Comments: Chrysotile asbestos present, but less than 1%.

Client Sample ID: AS-2 surface
Date of Collection: 12/12/2007
Date of Extraction: 1/2/08
Date of Analysis: 1/2/08

Lab Sample ID: AA77778
Matrix: Soil

CAS Number	Compound	Concentration %	RL %	Qualifier
	Actinolite	ND	1.0	
	Amosite	ND	1.0	
	Anthophyllite	ND	1.0	
	Chrysotile	ND	1.0	
	Crocidolite	ND	1.0	
	Tremolite	ND	1.0	

Comments: No Asbestos found.

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

Bulk Asbestos Analysis by PLM

Client Sample ID: AS-3 surface
Date of Collection: 12/12/2007
Date of Extraction: 1/2/08
Date of Analysis: 1/2/08

Lab Sample ID: AA77779
Matrix Soil

CAS Number	Compound	Concentration %	RL %	Qualifier
	Actinolite	ND	1.0	
	Amosite	ND	1.0	
	Anthophyllite	ND	1.0	
	Chrysotile	ND	1.0	
	Crocidolite	ND	1.0	
	Tremolite	ND	1.0	

Comments: Chrysotile asbestos present, but less than 1%.

Client Sample ID: TR1-01
Date of Collection: 12/12/2007
Date of Extraction: 1/2/08
Date of Analysis: 1/2/08

Lab Sample ID: AA77781
Matrix PLM

CAS Number	Compound	Concentration %	RL %	Qualifier
	Actinolite	ND	1.0	
	Amosite	ND	1.0	
	Anthophyllite	ND	1.0	
	Chrysotile	15	1.0	
	Crocidolite	ND	1.0	
	Tremolite	ND	1.0	

Comments:

US ENVIRONMENTAL PROTECTION AGENCY
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Charlestown Navy Yard

Bulk Asbestos Analysis by PLM

Client Sample ID: TR1-02
Date of Collection: 12/12/2007
Date of Extraction: 1/2/08
Date of Analysis: 1/2/08

Lab Sample ID: AA77782
Matrix PLM

CAS Number	Compound	Concentration %	RL %	Qualifier
	Actinolite	ND	1.0	
	Amosite	ND	1.0	
	Anthophyllite	ND	1.0	
	Chrysotile	15	1.0	
	Crocidolite	ND	1.0	
	Tremolite	ND	1.0	

Comments:

Client Sample ID: CR1-01
Date of Collection: 12/12/2007
Date of Extraction: 1/2/08
Date of Analysis: 1/2/08

Lab Sample ID: AA77783
Matrix PLM

CAS Number	Compound	Concentration %	RL %	Qualifier
	Actinolite	ND	1.0	
	Amosite	ND	1.0	
	Anthophyllite	ND	1.0	
	Chrysotile	ND	1.0	
	Crocidolite	ND	1.0	
	Tremolite	ND	1.0	

Comments: No asbestos found.

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

Bulk Asbestos Analysis by PLM

Client Sample ID: CR1-02
Date of Collection: 12/12/2007
Date of Extraction: 1/2/08
Date of Analysis: 1/2/08

Lab Sample ID: AA77784
Matrix: PLM

CAS Number	Compound	Concentration %	RL %	Qualifier
	Actinolite	ND	1.0	
	Amosite	ND	1.0	
	Anthophyllite	ND	1.0	
	Chrysotile	ND	1.0	
	Crocidolite	ND	1.0	
	Tremolite	ND	1.0	

Comments: No asbestos found.

Client Sample ID: P1-01
Date of Collection: 12/12/2007
Date of Extraction: 1/2/08
Date of Analysis: 1/2/08

Lab Sample ID: AA77785
Matrix: PLM

CAS Number	Compound	Concentration %	RL %	Qualifier
	Actinolite	ND	1.0	
	Amosite	ND	1.0	
	Anthophyllite	ND	1.0	
	Chrysotile	ND	1.0	
	Crocidolite	ND	1.0	
	Tremolite	ND	1.0	

Comments: No asbestos found.

US ENVIRONMENTAL PROTECTION AGENCY
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Charlestown Navy Yard

Bulk Asbestos Analysis by PLM

Client Sample ID: P1-02
Date of Collection: 12/12/2007
Date of Extraction: 1/2/08
Date of Analysis: 1/2/08

Lab Sample ID: AA77786
Matrix PLM

CAS Number	Compound	Concentration %	RL %	Qualifier
	Actinolite	ND	1.0	
	Amosite	ND	1.0	
	Anthophyllite	ND	1.0	
	Chrysotile	ND	1.0	
	Crocidolite	ND	1.0	
	Tremolite	ND	1.0	

Comments: No asbestos found.

Client Sample ID: RF1-01
Date of Collection: 12/12/2007
Date of Extraction: 1/2/08
Date of Analysis: 1/2/08

Lab Sample ID: AA77787
Matrix PLM

CAS Number	Compound	Concentration %	RL %	Qualifier
	Actinolite	ND	1.0	
	Amosite	ND	1.0	
	Anthophyllite	ND	1.0	
	Chrysotile	ND	1.0	
	Crocidolite	ND	1.0	
	Tremolite	ND	1.0	

Comments: No asbestos found.

US ENVIRONMENTAL PROTECTION AGENCY
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Charlestown Navy Yard

Bulk Asbestos Analysis by PLM

Client Sample ID: RF1-02
Date of Collection: 12/12/2007
Date of Extraction: 1/2/08
Date of Analysis: 1/2/08

Lab Sample ID: AA77788
Matrix PLM

CAS Number	Compound	Concentration %	RL %	Qualifier
	Actinolite	ND	1.0	
	Amosite	ND	1.0	
	Anthophyllite	ND	1.0	
	Chrysotile	Trace	1.0	
	Crocidolite	ND	1.0	
	Tremolite	ND	1.0	

Comments: Trace amount of chrysotile asbestos present.

Client Sample ID: WG1-01
Date of Collection: 12/12/2007
Date of Extraction: 1/2/08
Date of Analysis: 1/2/08

Lab Sample ID: AA77789
Matrix PLM

CAS Number	Compound	Concentration %	RL %	Qualifier
	Actinolite	ND	1.0	
	Amosite	ND	1.0	
	Anthophyllite	ND	1.0	
	Chrysotile	ND	1.0	
	Crocidolite	ND	1.0	
	Tremolite	ND	1.0	

Comments: No asbestos found.

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

Bulk Asbestos Analysis by PLM

Client Sample ID: WG1-02
Date of Collection: 12/12/2007
Date of Extraction: 1/2/08
Date of Analysis: 1/2/08

Lab Sample ID: AA77790
Matrix: PLM

CAS Number	Compound	Concentration %	RL %	Qualifier
	Actinolite	ND	1.0	
	Amosite	ND	1.0	
	Anthophyllite	ND	1.0	
	Chrysotile	ND	1.0	
	Crocidolite	ND	1.0	
	Tremolite	ND	1.0	

Comments: Chrysotile asbestos present, but less than 1%.

Client Sample ID: RF2-01
Date of Collection: 12/12/2007
Date of Extraction: 1/2/08
Date of Analysis: 1/2/08

Lab Sample ID: AA77791
Matrix: PLM

CAS Number	Compound	Concentration %	RL %	Qualifier
	Actinolite	ND	1.0	
	Amosite	ND	1.0	
	Anthophyllite	ND	1.0	
	Chrysotile	ND	1.0	
	Crocidolite	ND	1.0	
	Tremolite	ND	1.0	

Comments: No asbestos found.

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

Charlestown Navy Yard

Bulk Asbestos Analysis by PLM

Client Sample ID: RF2-02
Date of Collection: 12/12/2007
Date of Extraction: 1/2/08
Date of Analysis: 1/2/08

Lab Sample ID: AA77792
Matrix PLM

CAS Number	Compound	Concentration %	RL %	Qualifier
	Actinolite	ND	1.0	
	Amosite	ND	1.0	
	Anthophyllite	ND	1.0	
	Chrysotile	ND	1.0	
	Crocidolite	ND	1.0	
	Tremolite	ND	1.0	

Comments: No asbestos found.

Appendix E3

Ambient Air Testing Report - ALG Environmental



Environmental Consulting, L.L.C

20 Island Pond Road Derry, New Hampshire 03038

January 4th, 2008

Mr. Shawn Rising
Sovereign Consulting
9 Research Dr. Suite 2
Amherst MA. 01002

Subject: Ambient Air Testing – Phase Contrast Microscopy

Project: Building 108 – Former Power Plant
Ninth Street
Charlestown, MA

Dear Mr. Rising,

On December 12th, 2007, ALG Environmental LLC performed ambient PCM air testing around the exterior perimeter of an abandoned power plant known as building 108 on Ninth Street at the Charlestown Naval Shipyards. Mr. Stephen Powell of ALG, DLWD # 61750, collected the air samples using low flow battery powered Gillian pumps. ALG collected 5 PCM air samples which were analyzed off site by Pro-Science Analytical Services utilizing phase contrast microscopy, MA DLWD# AA000156

All samples were collected in accordance with the NIOSH 7400 Method. Results were less than the limit of detection. A copy of the analytical results is attached.

ALG would like to thank you for the opportunity to have serviced **Sovereign Consulting's** environmental testing needs. If you have any questions regarding the completed testing, please don't hesitate to call.

Sincerely,

A handwritten signature in black ink that reads 'Allen Grinnell'. The signature is written in a cursive style and is positioned above the printed name and title.

Allen Grinnell
General Manager

Cc: File - ALG Project #: 07-319

Attachment: Chain of Custody / Analytical Results



Environmental Consulting L.L.C.

20 Island Pond Road, Derry, New Hampshire 03038

Asbestos Project Daily Log

Project #: 07-319

Date: 12-12-07

Project Name: Building 108 at Charlestown Navy Ship Yard

Industrial Hygienist: Stephen Powell AI-900398

Time:

Activities

07:00 Stephen Powell (SP) arrives on site and meets with Shawn Rising (SR) with Sovereign Consulting (SC) and Catherine Young (CY) with the US EPA. SP, SR and CY walk the site perimeter and discuss the days activities and select sampling locations of bulk samples and CY request ambient air samples along the perimeter fence along both Third and Ninth streets.

08:00 SP calibrates and sets the following low volume pumps along perimeter fencing with locations noted on site plan by SR
Pump AS-1 (3L/min) started at 08:10 hrs. - sample AMB-01
Pump AS-3 (3L/min) started at 08:20 hrs. - sample AMB-02
Pump AS-4 (3L/min) started at 08:25 hrs. -sample AMB-03
Pump AS-5 (3L/min) started at 08:35 hrs. - sample AMB-04
Pump AS-2 (3L/min) started at 08:45 hrs. - sample AMB-05

09:45 John Macauley (JM) with MA. DEP arrives on site and meets with SP and CY to discuss the site history and present condition.

10:50 JM off site

11:15 SP collects the following 6 bulk samples of suspected asbestos containing material with locations noted on SC field notes
Transite panel from ground along wall 8
Concrete skim coat on exterior walls 9 and 10
Paint on concrete on exterior walls 9 and 10
Built-up Roofing on ground along wall 10
Built-up Roofing on ground along wall 1
Window glazing from metal window frame in wall 10

12:30 SP prepares COC for bulk samples

13:15 SP relinquishes COC and bulk samples to SR who relinquishes them to CY for delivery to the EPA lab

13:30 CY leaves site to deliver samples

13:45 SR leaves site for the day

13:20 to 13:40 SP recalibrates pumps and collects ambient air samples AMB-01, 02, 03, 04 and 05

14:00 SP collects equipment and contacts CY by phone to inform her that he has relocked gate and left the site for the day

Industrial Hygienist _____ **Date:** _____

1 of 1

PCM DATA COLLECTION CHAIN OF CUSTODY

Page 1 of 1

with Equations

Confidential